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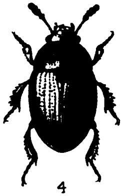

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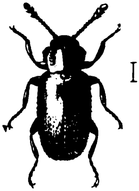

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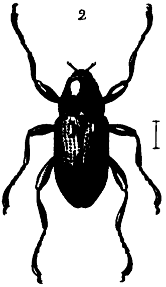

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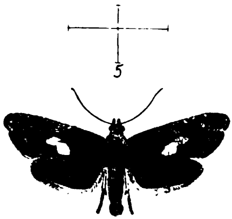

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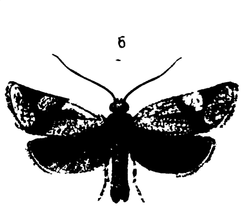

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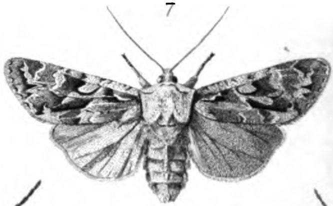

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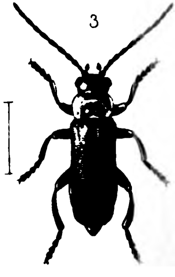

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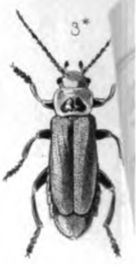

. E W Robinson, Del^t et Sc^p. 1866.

THE

ENTOMOLOGIST'S ANNUAL

FOR

MDCCCLXVII.

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Beetles, beetles everywhere!

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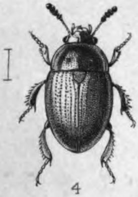
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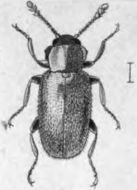
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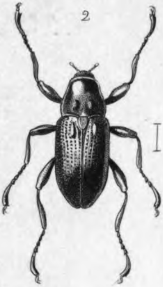
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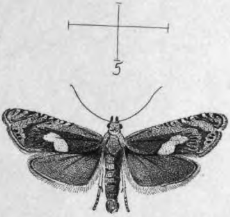
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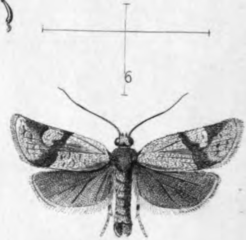
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EXPLANATION OF PLATE.

Fig. 1. *Cryptophagus Waterhousei*, Rye, see page 51.
2. *Macronychus quadrituberculatus*, Müller, see page 76.
3. *Telephorus Darwinianus*, Sharp, see page 52.
3*. *T. Darwinianus*, ♀.
4. *Anisotoma Silesiaca*, Kraats, see page 69.
5. *Dicrorampha flavidorsana*, Knaggs, see page 148.
6. *Tortrix ochreana*, Hübner, see page 147.
7. *Xylina Zinckenii*, Treitschke, see page 136.

Dreading that we might, as last year, be overrun with matter and compelled to exclude papers expressly written or our pages, we were very chary of asking for any communications before we knew the length of the Coleopterous Chapter,—and by the time that reached us, we were quite satisfied we should have fully as much matter as we wanted.

As some amends for the exclusion of the Hemipterous paper by Messrs. Douglas and Scott last year, we have devoted the first pages of the present Annual to the consideration of their portly octavo brought out under the auspices of the Ray Society. The article was written more than twelve months ago—and then remained on hand.

The Observations on Tineina have escaped exclusion this time by securing an early place in the volume.

The articles excluded last year have since (as our readers doubtless know) appeared in the pages of The Entomologist's Monthly Magazine.

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HEMIPTERA.

◆

The British Hemiptera. Vol. I. Hemiptera—Heteroptera. *By* John William Douglas *and* John Scott. *London: published for the* Ray Society, *by Robert Hardwicke,* 192, *Piccadilly.* 1865.

The work now before us is one of the most important contributions to British Entomology that has ever issued from the press.

It treats of a group of insects hitherto little studied in this country; but of which, in the volume before us, we have elaborately detailed descriptions of 352 species.

Of the seven main orders of insects (the *Coleoptera*, *Orthoptera*, *Neuroptera*, *Hymenoptera*, *Lepidoptera*, *Hemiptera*, and *Diptera*), several have been almost neglected by British Entomologists; and whilst the *Coleoptera* and *Lepidoptera* have always been collected and studied with more or less assiduity, the *Orthoptera*, *Hemiptera*, and *Diptera*, have found their votaries few and far between. Indeed, in many respects these insects have fared worse of late years than formerly, for at one time it was the custom for Entomologists to collect all the orders of insects; and then, at least, some amount of attention used to be paid to what have recently been appropriately termed "the neglected orders."

As the number of species in each order grew upon us, the more the insects were collected and studied, it soon became needful for Entomologists to select some individual order as the object of their pursuit, and hence many collections, which at first contained specimens of all the orders, were gradually restricted to a single order, and the *Lepidoptera* or the *Coleoptera* generally contrived to play the cuckoo's part and to drive the other orders from the collection, and monopolize the entire attention of the collector. Occasionally it has happened that an Entomologist has divided his labours between the *Coleoptera* and the *Lepidoptera;* but more generally the attention was exclusively given to a single order, and of late years most collectors have commenced their Entomological career either as Lepidopterists or Coleopterists.

The *Hymenoptera* have perhaps received the next largest share of attention ; and, thanks to the labours of Mr. Frederick Smith, we have several excellent little volumes on our British bees and wasps, issued by the Trustees of the British Museum.

The volume lately issued by the Ray Society treats of a portion of the order *Hemiptera,* for it so happens that the order *Hemiptera* divides readily into two distinct suborders, so distinct that Westwood, in his "Introduction to the Modern Classification of Insects," places them as two distinct orders—the *Homoptera* and the *Heteroptera,* but later writers on the group (such men as Fieber and Flor, who have specially devoted their attention to the study of these insects) treat the *Homoptera* and the *Heteroptera* as suborders of the primary order *Hemiptera.*

Linné, in his "Systema Naturæ," included in the *Hemiptera* not only the *Homoptera* and *Heteroptera,* but also the *Orthoptera.*

Fabricius removed the *Orthoptera,* but retained together the *Homoptera* and *Heteroptera* under the name of *Rhyngota.*

Stephens in his "Systematic Catalogue of British Insects" places the *Homoptera* and *Hemiptera* as distinct orders, the latter with him comprising the *Heteroptera* only. Curtis, in his "Guide to an Arrangement of British Insects," does the same.

In the year 1828 Stephens commenced the issue of a general descriptive work on British Insects, which came out in parts up to the year 1837, when, for various reasons, its issue was discontinued, only a single supplementary number appearing some nine years afterwards. This work naturally commenced with the two most popular orders (the *Coleoptera* and the *Lepidoptera*), and as it came to a premature end, the least studied orders fared badly, and the *Hemiptera* were altogether omitted, and hence we had no descriptive work treating on the British insects of that order.

Curtis, in his "British Entomology," figured and described several of the more interesting species. The excellent accuracy of his figures is too well known to need any special mention here.

The incomplete nature of the "Illustrations of British Entomology" led to a movement in the year 1849 for the publication of a series of volumes on British Entomology, under the title of "Insecta Britannica." The first scheme of five volumes was accordingly duly announced under the superintendence of a committee, consisting of the President and Secretaries of the Entomological Society of London, and Messrs. Spence, Stephens and Saunders; and this was intended to supply the orders or parts of orders most required to complete the descriptions of our British insects. This scheme of five volumes was limited to three volumes on *Diptera*, entrusted to Mr. Francis Walker; one volume on *Micro-Lepidoptera*, undertaken by Mr. Stainton; and one volume on the *Hemiptera* and *Homoptera*, which was to have been executed by Mr. Dallas.

Unfortunately, however, Mr. Dallas seemed to lose heart as the time approached for the preparation of his volume, and, although the other four volumes were regularly issued, the fifth volume of the series has never yet made its appearance, and hence a descriptive work on the British *Hemiptera* still remained a great desideratum.

Mr. Douglas, who had for many years devoted his attention almost exclusively to the *Lepidoptera* of this country, and to whose exertions, amongst the smaller *Lepidoptera*, Mr. Stainton's volume of the "Insecta Britannica" bears constant witness, had after a time found that his immediate neighbourhood furnished him with so little of novelty in that order, that he turned his attention more and more to the British *Coleoptera*. After a few years' active search, these also ceased to reward him with so many interesting captures, and then he gradually turned his attention to one of our hitherto most neglected orders,—the *Hemiptera.*

It was about this time that Mr. Scott, who had been for some time well known as an indefatigable collector and observer of *Lepidoptera* and *Coleoptera* in Scotland and in the North of England, came to reside in the neighbourhood of London, and it chanced that he selected for his abode the parish of Lee, in which Mr. Douglas had for many years resided; hence it happened that when Mr. Douglas turned his attention to the much-neglected British *Hemiptera*, he found in his friend and neighbour, Mr. Scott, one who was ready to aid and assist him in his new studies, and the co-operation of a hearty and zealous friend in such a matter is invaluable.

In collecting insects of an order, of which no British descriptive work existed, it was necessary to have constant recourse to continental works, of which those of Fieber, on the *Hemiptera* of Europe, and Flor, on the *Rhynchota* of Livonia, occupied the first place.

After Messrs. Douglas and Scott had been naming their specimens industriously for a year or two by the aid of these works, it occurred to some of the members of the Council of the Ray Society that matters were sufficiently ripe to allow of the preparation of a descriptive work on the British *Hemiptera*; and the result has been the volume before us, which, treating only of the *Hemiptera—Heteroptera*, extends to 627 pages, and contains, as already stated, accurate and detailed descriptions of 352 species of these insects.

In the preface the authors state, that "the object of the present volume is to furnish British entomologists with descriptions of the indigenous *Hemiptera—Heteroptera*. Hitherto only a few species have been described or figured by British authors, and to the consequent difficulty of naming their captures may probably be attributed the indifference with which this order of insects has been regarded by British collectors. The collections are few and imperfect, and either only in part or incorrectly named, the national collection in the British Museum being no exception."

"The materials for the present work have been collected by us in the southern counties, chiefly in the vicinity of London, during four or five years of almost undivided attention to the order, and we are also indebted to the liberality of a few friends for species from a distance. When *Hemiptera* shall be collected over a larger area, with the assiduity devoted to *Coleoptera* and *Lepidoptera*, there cannot fail to be a large addition to the number of our known species."

"The localities given are those of which we are certain, but many of the species, doubtless, exist elsewhere. The terms 'common,' 'rare,' &c., have reference chiefly to the southern counties of England. The time of appearance is given where it is known."

At first sight it may seem surprising that a volume treating only of 352 species should extend to 627 pages; but one main point in describing the species of a "neglected order" was to describe them so fully and so minutely that the descriptions should serve not only to distinguish the insects from the other known species, but also from any new and closely allied species which the future investigations of Entomologists might bring to light.

In the well-worked orders of *Coleoptera* and *Lepidoptera* we have every year a crop of new species added to our lists, and in the order *Hemiptera* we can have no doubt whatever, that very many novelties are yet to be detected; and hence the lengthy and detailed descriptions are really invaluable, and any attempt to have rendered them more concise would have detracted greatly from the value of the work. A point which will no doubt cause more embarrassment to many is the multiplicity of genera—the 352 species being here divided amongst 160 genera, and no less than 93 genera comprising only single species.

We presume, however, that this must have been an inconvenience which could not be avoided, and which was inherent in the nature of the subject.

On this point the authors should be allowed to speak for themselves; the italics, however, in the following passage are our own.

"On the continent the order has received great attention from eminent authors, and we have had to refer to their works for information; the latest and those to which we are most indebted being by Fieber and Flor.

"Fieber's 'Europaischen Hemiptera,' published in 1861, containing descriptions of all the European species, is the condensed result of a lifetime of observation, and will ever remain a monument of methodised labour and the genius of the author.

"We fear, nevertheless, that the exigencies of the 'analytic method' adopted have often led the author to exaggerate the importance of specific differences and *to create unnecessary genera.* From some of his conclusions in this respect we have been compelled to dissent, and *frequently, where we have adopted his genera, it has been rather from an intense dislike to add to the overburdened nomenclature by making new generic names for combinations of his genera, than from the conviction that they are necessary divisions.* On the other hand it may be that the discovery of many new and allied species would show that his prescience had, in some instances, seized upon the requisite generic characters.

"Flor's 'Rhynchoten Livlands,' published in 1860, is worked out in a masterly manner and with a philosophic conception, but from a different point of view to Fieber's work. Having more limited materials to deal with, the author has given more full and methodical descriptions; *he has aimed at making as few genera as possible, and has, consequently, placed generic value so high that he has to employ sub-genera, a device which, to say the least, is very cumbrous.*"

It is evident from the foregoing that the authors were themselves aware of the inconvenience of so great a multiplicity of genera, and would have avoided it could they conveniently have done so.

The 160 genera are divided amongst 65 families, and more than half of these consist of only a single genus (indeed there are upwards of 20 families which consist only of a single species). The families containing the greatest number of genera are the *Rhyparochromidæ* 17, and the *Capsidæ* and *Anthocoridæ* each 9.

The 65 families are divided amongst 19 sections; and as one section alone, the *Capsina,* comprises 20 families, many are restricted to a single family (indeed we have repeated instances of a *section* containing only a single species.

The 19 sections are distributed amongst three subdivisions —the *Geodromici* (or terrestrial species), comprising 12 sections; the *Hydrodromici* (or super-aquatic, species),* comprising 2 sections; and the *Aquatilia* (or sub-aquatic species), 5 sections.

The two first-named subdivisions form together the division *Gymnocerata* (with exserted visible antennæ), and the *Aquatilia,* with another subdivision, *Litoralia,* not represented in this country, (and which, indeed, consists of only a single species, *Pelogonus marginatus,* which occurs in the south of France and in Spain,) form the division *Cryptocerata,* in which the antennæ are very short and concealed in cavities beneath the eyes.

These two divisions, *Gymnocerata* and *Cryptocerata,* together form the sub-order *Heteroptera.*

The *Heteroptera,* as the name implies, are most readily distinguished from the *Homoptera* by the structure of the wings—in the *Homoptera* "the wings are all membranous, the anterior pair not overlapping each other;" in the *Heteroptera* "the anterior pair posteriorly overlap each other, the basal portion is coriaceous, the apical portion membranous, the posterior wings are membranous."

The *Homoptera* thus form a very distinct group, and in the first instance the authors of the volume before us, have probably done well to confine their attention exclusively to the *Heteroptera.* The preface informs us, that they "hope hereafter to produce a volume on the British *Hemip-*

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* *Hebrus pusillus,* which walks on *Lemna* and other aquatic plants, placed by Fieber amongst the *Hydrodromici,* next to *Limnobates stagnorum,* is here removed to near the centre of the *Geodromici.*

tera—Homoptera." In this they will, no doubt, be much assisted by the series of papers now being published in the Entomologist's Monthly Magazine, entitled "An Essay towards a Knowledge of British *Homoptera,*" from the pen of the Rev. T. A. Marshall, a treatise which, under so modest a title, is most philosophically written and of great scientific value.

The reader who takes up Messrs. Douglas and Scott's volume in order to learn from a perusal of it something of the natural history of the insects mentioned therein, is likely to be disappointed; the observations have yet to be made, the natural history of the British *Hemiptera* has yet to be written—and the reason is manifest—natural history is the biography of individual species, and where the species were unnoticed and unheeded, because they could not be named, no opportunity occurred of contributing to their biography. We trust, now that our *stand-punkt* is altogether altered with reference to these insects, that we shall soon witness an improvement in this respect.

The authors observe in the Introduction at p. 5, that "it is probably in consequence of the fact that the *Hemiptera—Heteroptera* are in all stages of their existence active and suctorial, and the consequent difficulty of supplying them, in confinement, with fresh appropriate food, that but few observations on their natural history have been made or recorded. There is a gradual development of the creature after it leaves the egg, not only in size but in the perfection of its organs. The larva resembles the imago, and is said to cast its skin three times before it reaches the pupa state; then the insect is still more like the imago, but some of its parts, such as the *ocelli*, wings and claws, are either rudimentary, or are barely indicated, and only become perfected after the last moult. But whether each species casts its skin the same number of times, how long the individuals of each species remain as larva, pupa or imago; what species have more than one brood in a year, and what constitutes the food of each species, are matters that, in the great majority of instances, remain to be determined. There is, therefore, a wide field for research in the natural history of this sub-order of insects."

Our readers must, therefore, understand that the almost total omission of any notices of the natural history of the species is a defect of which the authors were perfectly aware, and which, if possible, they would most willingly have avoided. Whenever any such scraps of information on reliable observation could be obtained they have been readily inserted. Thus at p. 66 we read of *Eurygaster maurus* that, "according to Léon Dufour, this species is common in France upon the ears of wheat, which it pierces and sucks whilst they are in a green state."

At p. 103 we have the following extremely interesting passage in reference to *Acanthosoma griseum.*

"De Geer, in his Mémoires (vol. iii. p. 262), gives a very interesting account of the affectionate care bestowed by a female of this species upon a numerous brood of young ones, exactly after the manner of a hen with her chickens, adding that Modeer had observed it was principally against the attacks of the male that the mother defended her young. Succeeding authors have quoted De Geer without, apparently, having seen the fact stated. But Mr. E. Parfitt, of Exeter, has sent us a female of this species, with several young ones, gummed on to the same card, and the following account of them :—

"When I first saw the mother sitting in the bright sunshine in the midst of her progeny on a birch leaf, I was much struck with the happy appearance of the family; it reminded me at once of the affection I had seen evinced by female *For-*

ficulæ for their young. The mother would occasionally get up and look around her, apparently to see if any enemy were approaching, and if all was quiet she* would sit down again. When disturbed by any thing, for instance, by a bit of stick, with which I touched a young one, the mother directly came to its rescue, putting her antennæ down to the little thing and drawing them over it. If that did not do, she would walk round it and endeavour to protect it. I repeated the experiment with some of the other young ones to see if it was really affection I had witnessed, and she repeated very nearly the same conduct, and now and then placing a leg over it. Altogether the little creature showed great excitement, and by running round them appeared exceedingly anxious about her little charges,—indeed I never before saw such affection exhibited by any insect. And I must add that I certainly felt a pang at taking the lives of these creatures, although if I had not done so, it now turns out, from your remark, the verification of De Geer's observation (which I had never seen) would not have been made."

The *Corticicolina* all seem to occur under bark, and at p. 271 we read that "the species of *Aradus* are said to feed on *fungi.*"

As the insects of the order *Hemiptera* are generally considered rather obnoxious to the olfactory nerves, it is interesting to find that *Anisopterus setulosus*, which has occurred at Hurst Wood, near Tunbridge Wells, "gives off when handled an exceedingly agreeable odour, much resembling that of ripe jargonelle pears" (p. 386), and of *Coranus subapterus*, we read, p. 542, "the insects, if handled, give out a delicate odour like that of ripe pears."

The section *Capsina*, which comprises nearly half the species in the volume, is probably the most puzzling and perplexing group of these insects, and the change of colour that takes place in dead specimens adds not a little to the difficulty of accurately determining the species. The authors observe at p. 483, "for the most part the insects composing this section, especially those that are green, fade much in colour after death. All have been described from specimens with their wings expanded, as without this being done their true characters cannot be ascertained, because the different colour of the upperside of the abdomen shining through changes their natural appearance."

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* See Kirby and Spence's "Introduction to Entomology," 7th edition, p. 203.

One observation relating to the habits of those insects occurs at p. 496, "Individuals of this species (*Anthocoris nemorum*), and also of *A. nemoralis*, are often found in the bladdery mines made on the leaves of oaks by the larvæ of the genus *Lithocolletis* (*Lepidoptera*), and Mr. Stainton once saw an *Anthocoris* outside one of such mines, with its rostrum thrust through the loosened lower cuticle of the leaf, sucking the juices of the larva within."

Of the family *Saldidæ* we read at p. 517, "all the species live on the margins of ponds and rivers, or on the sea-coast, running, jumping and flying with great activity, and very difficult to catch."

At p. 558, we read that "the *Hydrometræ* live on the surface of running or stagnant water, where they propel themselves rapidly by the rowing motion of their second and third pairs of legs, feeding upon any insects that may come in their way, catching them by springing upon them. They can also dive when alarmed." And at p. 562, we read of *Hydrometra najas*, "The apterous form is common on streams from April to October, where the insects run with great rapidity against the current; but among hundreds of examples, taken at different periods of the summer, we never found one with wings.

But Mr. Dale once took three pairs winged in his own pond, where the water is nearly stagnant; into this pond a few days previously he had put three pairs of apterous specimens taken from a stream, and although he cannot prove they were the same he afterwards caught, he believes they were, as he never found the species in his pond before or since."

Of the genus *Velia* we read, at p. 571, "the insects of this genus live gregariously on the surface of water, where, as Schummel observes, they look like spiders, and they move rapidly about by little leaps."

And at p. 587 we read that "the *Notonectæ* swim very rapidly, with the back downwards, using their hind legs like oars, whence their name of 'boat-flies.' Their rostrum is capable of inflicting a painful wound in the hands of those who take hold of them without due care." It is observed also of the pygmy genus *Plea*, that, "like *Notonecta*, it swims with the back downwards."

In the genus *Corixa*, of which there are no less than 18 species described in this volume (by far the largest number of species in any one genus), not less than eight, we observe, have been detected by Mr. G. R. Crotch in the Cambridge Fens, which we apprehend is an indication that, if other districts were explored with equal care, many other additions might be made to the genus.

The plates are 21 in number, and are in Mr. Robinson's best style; they are a model of what entomological plates ought to be. The first plate is devoted to the general structure, and if this plate be studied with the aid of the introductory chapter, pp. 1—5, the veriest tyro will find no difficulty in applying the proper names to the various parts of a Heteropterous insect. There are magnified views of the upper and underside of an insect of one of the most typical sections, the *Scutatina*, and then follow dissections of the various parts of the head, and representations of the elytra in that and other sections.

In the remaining plates illustrations are given of every one of the 160 genera in the volume, and magnified representations of upwards of 150 species. Some of the plates are positively crowded with dissections.

Before we close our notice of the volume we must not omit to notice the great care and pains which appear to have been bestowed upon the synonymy; had the volume contained nothing else it would have been of extreme value.

The authors observe "the synonymy has been rendered as full as is consistent with accuracy, the preference always given to the oldest name, and doubtful citations and references to mere lists omitted." Accordingly we find the references given very fully to all descriptive works, whenever the descriptions could be with certainty deciphered; but references to such lists as Stephens' Catalogue and Curtis' Guide are wisely omitted, such references being utterly valueless.

Westwood, in his "Introduction to the Modern Classification of Insects," observes of the *Heteroptera*, vol. ii. p. 453, "by far the greater proportion of these animals are found upon plants, from which they derive their nutriment; some, however, feed upon other and weaker insects, found in similar situations." It strikes us one main point calling for observation would be to discover which of the families are phytophagous and which insectivorous.

Again Westwood states, "fruit, such as raspberries, &c., is occasionally rendered very offensive to the taste by some of the garden species having previously passed over or sucked its juices." Now we should be very curious to learn whether it is only a single species, or whether there are several, that thus affect our raspberries.

Possibly many of these insects, like the too well-known *Acanthia lectularia*, are lovers of darkness and nocturnal in their habits; but many of the gay, lively, active, flower-frequenting species seem as truly formed for a life of daylight and sunshine as any insects we have, and observation will no doubt now be directed to their habits.

The Ray Society has done very wisely in issuing such a volume as this; but why should it not issue more publications devoted to entomological science: even one of our best studied orders, the *Coleoptera*, is terribly in want of a good descriptive British work; and though if worked out on the same elaborate scale as this volume on the *British Hemiptera—Heteroptera*, the British *Coleoptera* would require at least ten volumes of this size, still we think it might be possible, by selecting individual groups, to attack the order piecemeal.

And besides the *Coleoptera* many other groups of insects are still much in want of good descriptive works. The *Orthoptera* are sadly neglected, and even the *Neuroptera* scarcely meet with the amount of attention that we should expect.

Even in *Lepidoptera* is the field of publication *entirely* exhausted? Now that so much has of late years been done in rearing larvæ from the egg, would it not be possible to bring out (not as a booksellers' speculation, but as a solid contribution to science) a work on the Transformations of the British *Geometrina?* The united labours of a Buckler, a Harpur Crewe and a Hellins might, we should think, do something in that direction.

There is one important omission in the volume of Messrs.

Douglas and Scott, and that is, a tabular view of th
and families. We, therefore, append such a tabl
notice; the figures under each group, section or fam
the number of genera and species comprised in the r
groups, sections and families.

When the proposed volume of the *Hemiptera—Ho*
appears we trust that such a table will be found in th
itself.

TORALIA

Naucorina.
1–1.
1. Naucoridæ.
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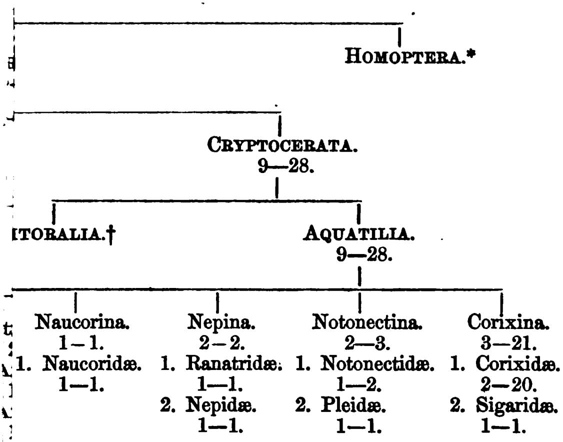

ne. † Not represented in Britain.

OBSERVATIONS ON TINEINA.

By H. T. STAINTON, F.L.S.

IN the Annual of last year the "Observations on Tineina" were excluded from want of space, and were afterwards published in the Entomologist's Monthly Magazine, vol. iii. pp. 54—57 and 78—82.

This year I have put this chapter earlier in the volume, but, in order not to trespass too much on the space which may be required for other matters, I have given only a selection from the observations of the past season.

My visit to the South of France in the month of March last (where I was at Cannes from the 9th to the 13th, and at Mentone from the 13th to the 28th) opened to me quite a new field of observation. But much that was then noted is omitted here, as it will at some future date find a place in a work I am proposing on the Tineina of Southern Europe.

The species marked * are not yet known as British.

* *Hyponomeuta egregiella*, Duponchel, "Lép. de France," xi. p. 345, pl. 299, fig. 9. This conspicuous species, placed by Duponchel in the genus *Butalis*, and by Wocke in the genus *Swammerdamia*, was first bred by Dr. Staudinger when in the South of Spain in 1857 and 1858. Its true place is evidently near *H. Stannellus*, Thunberg (*Rufimitrella*, Z.); but whereas that has the anterior wings entirely of a unicolorous leaden grey, in *Egregiella* the costa is whitish beyond the middle, and a conspicuous white streak

runs along the fold, and in the centre of this streak is a black spot.

For my acquaintance with the larva of this insect I am indebted to Monsieur Millière, who showed me a number of them in one of his breeding-cages when I called on him at Cannes on the 10th of March, and the next day he took me to a locality where the larvæ occurred, and I had an opportunity of learning their habits. They feed on *Erica scoparia*, and seem to prefer bushes which are not densely clothed with leaves. They are not exactly gregarious, but generally several occur on the same plant. They spin slight webs in the upper twigs of the bush, and in these webs form thicker tubes of silk, open at each end, in which they reside.

The handsome larva I have thus described :—

Length 6 lines; above blueish-black, with an ochreous line on each side of the slender blue-black dorsal line; the spiracular line whitish-ochreous, more yellowish on the anterior half of each segment; spots black; head tawny, inclining to ferruginous; the second segment blackish, with a central whitish line; belly grey.

The younger larvæ appear darker, the pale lines on the back being less distinct and often interrupted.

I did not meet with this at Mentone, where *Erica scoparia* does not occur.

The perfect insects made their appearance from the 19th of April to the 5th of May.

* *Prays oleellus*, Boyer de Fonscolombe; first described in the "Annales de la Société Entomologique de France" for 1837, pp. 180—182, under the name of *Tinea oleella*. Having obtained from Herr Kaltenbach, in the autumn of 1865, the suggestion that this olive-feeder was congeneric with the ash-feeding *Prays Curtisellus*, I looked for it diligently at Cannes and Mentone in March last. Nor was I

disappointed. I first met with it as a small leaf-miner, ejecting its excrement through a small hole on the under side of the mine, on the 12th of March, at the anemone ground near Muhet, and subsequently I scarcely ever looked critically at the leaves of an olive tree without finding it. On the 23rd of March, at Mentone, I found the nearly adult shoot-feeding larva on an olive tree, which was considerably more advanced than its neighbours, and I found that at that period of its growth the larva was a veritable pest, eating down the stems of the young shoots and completely destroying them. The full-fed larva spun a slender open cocoon amongst the twigs of the olive, much resembling the open cocoon of *Curtisellus*, and the perfect insect, though so much smaller than *Curtisellus*, closely resembles it in habit and structure, and there is even a certain similarity in the markings between the two species.

The mining larva I have thus described:—

Length 1¼ line. Pale olive green; dorsal vessel a little darker; head brown-black, and a brownish elongate spot on the posterior half of the second segment; anal segment with a small black plate.

The shoot-feeding larva thus:—

Length 3½ lines. Whitish-green; slightly darker on the back, especially at the place of the subdorsal lines; head pale yellowish-brown; the second segment rather more whitish than the ground colour, with two dark brown spots above of rather irregular form; anterior legs grey.

I have yet to make the acquaintance of Boyer de Fonscolombe's *Tinea Olivella*, the *Tinea oleella* of Fabricius, of which that author says, "Habitat in nucleis fructus Oleæ, quos cadere facit ante maturitatem."

Psoricoptera gibbosella. On the 6th of June I received some larvæ of this species, along with several other oak-feeders, from Mr. Barrett, of Haslemere. The larva of *Gibbosella* rolls the oak leaves tubularly lengthwise. It is very like the young larva of one of the common oak-feeding *Tortricina*, but is more active, and with the tremulous motion of the head so common amongst larvæ of the genus *Gelechia*; moreover, the subdorsal lines are darker and more distinct.

I have described it thus:—

Length 6½ lines. Grey, with darker subdorsal lines and slender, slightly darker dorsal line; head black; the second segment black, with the anterior edge whitish; anal segment with a small black plate; ordinary spots small and black. The moths appeared on the 9th and 10th of July.

Gelechia intaminatella, Stainton (Entomologist's Annual, 1861, p. 86). Mr. Sang has kindly sent me bred specimens of this insect, the larva of which feeds on *Lotus corniculatus*, between united leaves. The larva is so like that of *Gelechia nigricostella*, especially when young, that the larvæ he sent me in 1865 appeared to me those of that species.

From larvæ of this species sent to me by Mr. Sang last September, I have made the following description:—

Length 4 lines. Yellowish-green, with a faint reddish tinge; head and second segment clearer yellow; ordinary spots small, neat, black. The younger larvæ are greener and very like those of *G. nigricostella*.

Mr. Sang writes: "They assume the later colour at their last moult, and retain it till they change to the pupa state, between the end of March and the end of April. The moths emerge at the end of May and beginning of June."

Gelechia vorticella. Through the kindness of Herr Glitz, of Hanover, I received some larvæ of this species on the 13th of June. They were feeding between united leaves of *Lotus corniculatus*.

They were very like the larvæ of *Gelechia tæniolella*, and also reminded me strongly of those of *G. albipalpella*; yet the insects bred from them on the 1st and 8th of July were veritable *Vorticella*, with the anterior wings shorter than in *Ligulella*.

The larva I have described thus:—

Length 5 lines. Reddish, mixed with pale green; the latter colour prevailing on the anterior half of the larva; head pale-yellowish brown; the second segment with four black semi-lunules above, the inside of these lunules being filled up with yellowish-brown.

Gelechia Sangiella, Stainton (Entomologist's Annual, 1863, p. 149). Of the larva of this species I received some specimens from Mr. Sang on the 20th of June. The larva feeds between the united leaves of *Lotus corniculatus*. I have described it thus:—

Length 4 lines. Reddish-brown; between the anterior segments whitish-green, and with a slender whitish dorsal line as far as the fourth segment; head yellowish-brown; the second segment with a black plate, above divided down the middle.

In form this larva is stout in the middle and much attenuated in front.

Gelechia atrella, Haw. This insect has been bred by Mr. W. R. Jeffrey, of Saffron Walden. On the 7th of May last Mr. Jeffrey wrote to me: "In the tin box you will find a few young plants of *Hypericum*, in the stems of which a peculiar-looking larva is mining, and causing the tops to droop. This drew my attention to them, but after finding the first one it was a long time before I could see another, and after all I only secured some seven or eight."

This larva I have described thus:—

Length 3 lines. Glassy, faintly marbled with darker and with a slight yellowish-brown tinge on the fifth and ninth segments; head very pale brown; second segment with a transverse grey plate posteriorly, and with a small blackish spot anteriorly on each side.

On the 18th of June Mr. Jeffrey wrote; "I much wonder that you have not found the larvæ in the *Hypericum* stems in your neighbourhood, as not only have I found it in several different places round here, but I also met with it near Tunbridge Wells, in the direction of Pembury."

On the 12th of August I received from Mr. Jeffrey a pair of bred specimens of *Gelechia atrella*, accompanied by the following remarks:—"I send two examples of the *Gelechia* produced from the *Hypericum* stems. The first two emerged on the 7th of July. All I have bred (from 12 to 14) came from the dried stems. As I was unable to detect any pupæ, I presume they underwent their change in the stems. Two small specimens came out as late as the second week in August."

Not having at all expected that the larva of *Gelechia atrella* would have had so peculiar a habit, I wrote at once to Mr. Jeffrey to inquire if it was not just possible some error of observation had occurred, and that some larvæ feeding on one of the *Leguminosæ* had been accidentally introduced into the breeding-cage, as plants of that order seemed a so much more natural food than the stems of *Hypericum*. I suggested further that it would be desirable to examine the dead stems to see if the empty pupa skins were really there.

Mr. Jeffrey took my objections in very good part, and most kindly wrote a detailed statement in reply:—"I now write to assure you that the bred specimens of *Gelechia atrella* must have come from the larvæ in the *Hypericum* stems. I am not surprised at your being somewhat sceptical about it, and I should exceedingly regret having errors in observation recorded; but I feel really confident in this case, having taken great pains to ascertain what these larvæ would produce.

"I think you will be satisfied that there could be no mistake, when I tell you—

"1st. That I had collected *no* small larvæ on any Papilionaceous plant before the first specimen of *Atrella* had emerged.

"2nd. The *Hypericum* stems were in *three* different receptacles—a deal box, a jam-pot and a glass bottle. Of these *the two first certainly each produced* some of the *fourteen or fifteen* specimens I have bred, and I believe the glass bottle also yielded some. Now, these receptacles were cleared out before the *Hypericum* stems were placed in them. *The box*, indeed, had not been used before for larvæ. But even supposing that your imaginary larva, feeding upon one of the *Leguminosa*, had been accidentally introduced into *one* of my cages, does it not strike you as a most remarkable coincidence that the *same* unknown larva should have got into *two, if not into all three of my cages?*

"The old stems I unfortunately threw away, and I now regret that I did not examine them more closely; but having taken so much care, I did not feel any doubt on the subject."

With this explanation I think we must feel convinced that the larva of *Gelechia atrella* does really feed on the stems of *Hypericum*.

* *Acrolepia Vesperella*, Zeller (Stettin. Ent. Zeit. 1850, p. 156). This is the *Acrolepia Smilaxella* of Millière (Iconographie et Description de Chenilles et de Lépidoptères inédits, dixième livraison, p. 385, pl. 46, figs. 6—11). On the occasion of my first walk at Cannes with Monsieur Millière, March 10th, he called my attention to the opera-

tions of the larva of this species on the leaves of *Smilax aspera*, some being mined by the young larva, others gnawed externally by the adult larva; but I was not successful on that occasion in meeting with any of the larvæ. About a week later I first met with the larvæ at Mentone, in a shady place; and on the 21st of March I met with them in some plenty, and have bred from them a nice series of the imago.

The larva I have thus described:—

Length 2½ lines. Dull greenish-grey, with the dorsal vessel darker, the sides paler; head pale yellowish-brown; the second segment of the same colour, with two transverse rows of small black spots; the transverse spots on the third and fourth segments are distinctly perceptible; the spots on the other segments imperceptible. Not unfrequently, especially when nearly full fed, it appears with deep red subdorsal lines, and is then a very handsome larva.

When young it makes small, clean mines in the leaves, the excrement being ejected through a hole in the underside of the leaf. Afterwards it gnaws the leaves half-through from the underside in narrow strips, often covering itself with a thin layer of "frass" and silk.

The open network cocoons are made of brown silk, through which the pupa is distinctly perceptible.

The moths appeared with me from the 16th to the 26th of April.

Acrolepia betuletella. Mr. Sang has again had the pleasure of capturing this insect at Castle Eden Dene, at the end of September, and most liberally added the species to my collection.

Herrich-Schäffer and Wocke both labour under the delusion that the *Betuletella* of Curtis is the Continental onion and leek-feeder *Assectella;* but the two species are abundantly distinct.

The larva of *Betuletella* is still to be found; but the idea has occurred to me that, like *Assectella*, it may feed upon some some species of *Allium*, and I believe *Allium ursinum* grows not uncommonly where *Betuletella* occurs.

* *Gracilaria fidella*, Reutti. Through the kindness of Herr F. Hofmann, of Ratisbon, I received, early in August, larvæ of this species. They turn down the tips of the leaves of the hop (*Humulus Lupulus*) towards the underside, forming a sort of conical habitation.

The larva, as usual in this genus, is devoid of character.

The perfect insects, which are something like small, neat specimens of *Gracilaria hemidactylella*, appeared between the 21st of September and the 5th of October.

* *Stathmopoda Guerinii*, Stainton (Entomologist's Annual, 1858, p. 152, fig. 5). This singular insect had remained perfectly unique till this year. When at Cannes and Mentone, in March, I saw many bushes of *Pistacia lentiscus*, some of which had numerous galls on the leaves; but though *Pistacia terebinthus* is indigenous in that part of Europe, I am not aware that I ever once met with it.

In August last Dr. Staudinger left Dresden to have two months' collecting at Celles-les-bains, in the Department of Ardèche, in the South of France. From this place he sent me, on the 21st September, some *Nepticula* larvæ, mining in the leaves of *Pistacia terebinthus*. In writing to thank him for these larvæ, on the 28th September, I added as a postscript: "I would also call your attention to the fact that No. 2,228 of your Catalogue, *Stathmopoda Guerinii*, Stainton, was 'éclose d'une grande galle du pistachier, le 15 Septembre, 1852.' I only know this one specimen."

This postscript produced good fruit, for on the 2nd October Dr. Staudinger replied: "Many thanks for your letter, especially for the notice of *Stathmopoda Guerinii*, of which I now send you five larvæ."

These larvæ inhabited elongate, pod-like galls, formed on the ends of the branches of the *Pistacia terebinthus*. These galls contained many hundred Aphides, and appeared to be formed by those insects. Along with them Dr. Staudinger found larvæ of one of the *Phycideæ*, and these larvæ of the *Stathmopoda Guerinii*, which feed upon the inner walls of the gall.

With me the perfect insects began to appear on the 9th of November, though with Dr. Staudinger they had already begun to appear at least a fortnight earlier.

In repose the insect erects its hind legs, and sticks them out laterally, just as is done by *Stathmopoda pedella*; yet the difference in structure of the antennæ, and in the form of the hind wings, from what we find in *Pedella*, is very great.

Since the able paper by Mr. Benjamin D. Walsh, of Rock Island, Illinois, "On the Insects inhabiting the Galls of certain Species of Willow," published in the 3rd volume of the "Proceedings of the Entomological Society of Philadelphia," p. 543, more attention has been paid to the "other insects which habitually breed in the galls formed by the true gall-makers, and which, as they feed on the substance of the gall itself, and only occasionally or incidentally destroy the gall-making insect, may be appropriately considered as Inquilines or Guest-flies."

Amongst such Inquilines, Dr. Brackenridge Clemens has described, in the same volume, pp. 506—508, three species of *Gelechia*, namely—

Gelechia gallægenitella, received from Mr. B. D. Walsh, the larva mining the cabbage-like gall, *brassicoides*, peculiar to *Salix longifolia*.

Gelechia fungivorella, bred by Mr. B. D. Walsh, who writes: "The larva mines a cabbage-like gall, *brassicoides*, peculiar to *Salix longifolia*, and a pine-cone-like gall on *Salix cordata* named *strobiloides* by Osten Sacken."

Gelechia salicifungiella, bred by Mr. B. D. Walsh; the larva mining the same gall, *brassicoides*, as *G. fungivorella*.

And in the fifth volume of the "Proceedings of the Entomological Society of Philadelphia," p. 142, Dr. Brackenridge Clemens has described a species of *Batrachedra*, under the name of *salicipomonella*, which is also a gall-inquiline.

Dr. Clemens observes, "This is a very interesting 'micro,' not only in consequence of the specific resemblance it bears to the European *Batrachedra præangusta*, but of the discovery of its larva by one of our most gifted and promising Entomologists, Mr. Benjamin D. Walsh, of Rock Island, Illinois.

"In the note which accompanied the perfect insects, Mr. Walsh writes: 'I enclose herewith several specimens of a moth, bred from the Tenthredinidous gall, *Salicis pomum*, Walsh, MS., and a single one from the Cecidomyiadous gall, *S. rhodoides*, Walsh. This is the insect that I think I mentioned to you as being very prettily marked in the larva state, each segment having a broad black band, and the ground colour being whitish. I had a single one come out last summer, but the great bulk of them hybernated either in the larva or pupa state, and came out May 8th—20th. They vary very little. I have beaten larvæ of very similar appearance off oak trees.'"

And in a subsequent letter Mr. Walsh furnished the following additional particulars:—

"This larva occurred in abundance, August 23rd, and subsequently in the Tenthredinidous gall, *S. pomum*, Walsh, MS., which grows on the leaves of *Salix cordata*. Each gall contained but a single larva, unaccompanied by the larva of the *Nematus*, which makes the gall, which it must consequently have destroyed or starved out, either in the egg or in the larva state. A single imago came out in the autumn of the same year, but the great bulk of them came out next spring, May 8—20th, from galls kept through the winter. There can be no doubt of the correlation of larva and imago, because no other Lepidopterous larva or imago occurred in the gall *S. pomum*, though I had three or four hundred of them in my breeding vase. The insect must hybernate normally in the larva state, for I noticed numbers of them in the spring crawling about among the galls. In a state of confinement it generally retires to the inside of the gall to assume the pupa state, though I noticed one or two cocoons spun among the galls. Probably in a state of nature it hybernates in the gall, comes out of it in the spring, and spins its cocoon amongst dry leaves and rubbish.

"I also bred a single imago of the same species, May 11th, from the Cecidomyidous gall, *S. rhodoides*, Walsh, from galls kept through the winter, and I found in the spring a denuded imago of what was apparently the same species, dead and dry amongst a lot of Tenthredinidous galls, *S. desmodioides*, Walsh, MS., which is closely allied to *S. pomum*, but occurs on the leaves of a very distinct species of willow. Thus we have three different willow-galls inhabited by the same moth, two of them made by saw-flies and one by a gall-gnat."

Batrachedra præangusta I have bred from pupæ found by Mr. Thomas Boyd in 1854, on the trunks of willows, and I believe Mr. Boyd once sent me larvæ of this species; but unfortunately my want of faith in them led me to neglect to describe them, which I now much regret; but it strikes me as extremely probable that the *feeding* larvæ in autumn may be found to have a habit similar to that of their American congener; and as the discovery of the larva of so interesting an insect as *Stathmopoda Guerinii* will give a fresh impetus to the study of galls and their inquilines, I am in great hopes that many interesting discoveries will result therefrom.

Stathmopoda pedella. I received from Herr Hofmann, of Ratisbon, a larva, supposed to be referable to this species, inhabiting the interior of the berries of the alder. The larva was broad and rather flat, and it was almost impossible to extricate it without squashing it.

I now much doubt whether this larva really belongs to *Stathmopoda pedella*. May not the larva of *Pedella* rather be a gall inquiline? A habit such as that assigned by Mr. Benjamin Walsh for the larva of *Batrachedra salicipomonella*, if we moreover suppose the gall to be found on the leaf of the alder (as many Tenthridinideous galls are found on the leaves of willows), would answer the notice given by Linné in the "Fauna Suecica," "Habitat in alni foliis subcutanea. T. Bergmann;" and would throw light upon the assertion of the aforesaid T. Bergmann, that "even *Lepidoptera* cause such growths as are termed galls."

If the *Tenthridinideous* author of the gall were destroyed, as mentioned by Mr. B. Walsh, the inquiline would appear the maker of it. So true it is, even in these small creatures, that—

"Fools build houses,
And wise folk live in them."

Laverna Rhamniella. Of this insect Mr. Jeffrey kindly sent me larvæ on the 5th May, in the shoots of *Rhamnus catharticus*. They were then feeding on the young, scarcely-expanded leaves, which they slightly rolled up, and there fed on the interior portion.

The larva I have thus described:—

Length 2 lines. Watery-greenish, with the dorsal vessel rather darker; head black; the second segment with a transverse black plate; the anal segment with a small greyish plate.

I bred one specimen of the perfect insect on the 10th of June.

In Memoriam.

CARL VON HEYDEN.

BORN JANUARY 20TH, 1793—DIED JANUARY 7TH, 1866.

SIX years ago was commenced in the pages of the Stettin. Entomologische Zeitung a series of articles headed with the modest title "Fragments from my Entomological Journals," by Carl von Heyden. These were continued to within a few months of that excellent observer's lamented decease.

When I last saw him in September, 1865, he told me in allusion to a new *Tinea* which I had seen in the collection of Dr. Rössler, at Wiesbaden, that he had sent a description of it to the Stettin. Entomologische Zeitung *in the last paper he should write.*

I have thought it not undesirable, as a contribution to a monument in memory of the departed, to collect together and arrange in the natural order of the species these notices, and give here those of 23 out of the 98 species which he published.

I have omitted however in these notices the actual descriptions of the larvæ, fearing to make the paper too lengthy. When any one finds a larva with the precise habit indicated by von Heyden, it is easy enough then to make reference to the original descriptions; and the Stettin. Ent. Zeitung is now found in many Entomological libraries in this country.

These 23 notices now given include the Geometrina, Pyralidina, Crambina and Tortricina; and I believe will be found to contain much that is interesting.

The figures between brackets at the end of each notice indicate the date of entry in the journal of my lamented friend.

H. T. S.

Gnophos glaucinaria, Hübner, Heyden (E. Z. 1862, p. 171). I found the larva of this *Geometra*, previously only found in the Alps, in vineyards at Rüdesheim on the Rhine, on *Sedum album*, the middle of April, 1860. It was very lazy, and when sitting upright would frequently, when touched, make a tremulous movement with the anterior segments. In my breeding-cage, it sat throughout the following winter on its food-plant without eating. In the beginning of April, 1861 (thus after nearly a year), it moulted, and again began to eat, and by the beginning of June had doubled its size, when it spun a thin white cocoon, and changed to the pupa state.

The perfect insect appeared at the end of June, and showed no difference from specimens from the Swiss Alps.

Some years previously I found similar larvæ at the same place, but they died.

The discovery of the locality for a species only previously found in the Alps is interesting. (1861.)

Herminia modestalis, n. sp., Heyden (E. Z. 1865, p. 375).

Palporum articulus ultimus secundo duplo brevior et angustior; alis unicoloribus cinereis, subtilissime obscure squamulatis.

Exp. al. 13—14 lin.

This species somewhat resembles *H. tentaculalis*, L., both in form and size, but the wings are rather narrower; the antennæ are shorter, as are also their pectinations; the palpi likewise are shorter, compressed, dark grey; the second joint is furnished with a specially strong brush beneath; the terminal joint is half as long, narrow, pointed, but little directed upwards.

Wings unicolorous ashy-grey, irrorated with very small darker scales, which when highly magnified form wavy lines. From the more numerous scales, the costa of the anterior wings appears darker; a fine blackish line precedes the ashy-grey cilia. The underside is nearly of the colour of the upper side.

In one specimen there is a faint trace of a darker transverse line at three fourths of the length of the wing.

Five males, taken the beginning of August, at St. Moritz, in the Engadine. (1851.)

Ennychia cingulalis, Hübner, Heyden (E. Z. 1861, p. 31). The larva occurs in the middle of September in a wood at Mombach near Mayence, on *Salvia pratensis*. It generally lives under the leaves which lie flat on the ground, which it gnaws from the under side as far as the upper epidermis, whereby transparent spots appear on the upper side of the leaves. Its web, into which it escapes when disturbed, is generally found near one of the *Salvia* leaves amongst moss and dead leaves; in its neighbourhood there are always rather large heaps of black excrement.

Rarely the larva, which is not very active, is found on a higher leaf, which is then rather spun together.

The larva winters in a rather large grey-brown, papery cocoon, and changes to the pupa state in spring. The perfect insect appears at the end of May and beginning of June. (1857.)

Botys lancealis, W.V., Heyden (E. Z. 1862, p. 172.) The larva occurs near Frankfort, the middle of October, on *Eupatorium Cannabinum*, between tubularly united leaves. It winters in a large, thin, oval, flat, white cocoon, and changes in April to the pupa state. The imago appears at the end of May. (1829.)

Botys rubiginalis, Hübner, Heyden (E. Z. 1863, p. 341). The larvæ of the first brood appear in June, those of the second in September. They feed on *Betonica officinalis;* turning down the leaves lengthways towards the underside, forming a thin cocoon. The larvæ of the second brood winter, however, under a rather thick white cocoon.

The perfect insect appears in May and June, and then again in August and the beginning of September. It is not scarce round Frankfort. (1828.)

BOTYS INSTITIALIS, Hübner, Heyden (E. Z. 1860, p. 115). The larva is not scarce on the sands of Mombach, near Mayence, where it was first discovered in 1835 by Herr August Becker, who communicated it to me. It feeds in June gregariously between the leaves of *Eryngium campestre,* which it spins together to a large, long cone. At the end of June it changes to a pupa in this singly, in a longish, very thin cocoon, with irregular net-work, and in the middle or end of July the imago appears, and makes its escape by one of the round holes which the larva had gnawed in the cone.

Of late the larva has been often found in the same locality by Herr Mühlig, Herr Anton Schmid and myself.

Herr August Becker also informed me in a letter that in 1855 he found the same larva between Paris and Fontainebleau. (1836.)

CHOREUTIS MYLLERANA, Fab. (MÜLLERANA), Heyden (E. Z. 1865, p. 104); (*Scintillulana,* Hüb). I found the larva near Frankfort at the end of August on *Scutellaria galericulata,* the leaves of which it turns downwards by means of a slight web and gnaws from the underside, hence causing large brown spots.

Professor Fritzsche, of Freiberg, called my attention to this on an excursion we were making, he having first found the larva at Freiburg.. Herr Anton Schmid and I had previously met with the imago in the same locality, also at Offenbach and Enkheim. *Myllerana* is an error in writing in Fabricius, as he named the insect after O. F. Müller.

EUDOREA CRATÆGELLA, Hübner, Heyden (E. Z. 1865, p. 376). I found the larva at the beginning of April, 1858, at Jugenheim, in the wood under moss on trees, where it inhabited a slight tubular web. It changes to the pupa state in a thin white cocoon, and the imago appeared in the middle of June. (1858.)

NEPHOPTERYX SIMILELLA, Zincken, Heyden (E. Z. 1860, p. 116). I found the larva in the Frankfort wood at the beginning of July, another time at the beginning of August, on oaks in an irregular web amongst leaves. It occurs in small societies and is tolerably active. In the web it changes to the pupa state in a small, oval, flat white cocoon, into which its excrement is interwoven. The imago makes its appearance in the middle of May of the following year. Formerly I distributed specimens as *Myelois condignella*—not *Contiguella*, as stated by Herrich-Schäffer. (1832.)

MYELOIS CRUENTELLA, Duponchel (non H.-S.), Heyden (E. Z. 1865, p. 376). I have lately received this beautiful species from Count C. Hoffmansegg, who, on the occasion of the Entomological excursion to Spain in the present year, took several specimens in Granada. This species finds no place in Herrich-Schäffer's great work, nor in Staudinger and Wocke's Catalogue, although it has been well described and figured by Duponchel as *Ilythia cruentella* (Suppl. vol. 4, p. 365, pl. 79, fig. 5). It is evidently allied to

Myelois Rosella, Scop. (*Pudorella*, Hüb.), but not to be confounded with that species. It is generally larger, has the anterior wings longer, with yellow cilia, not preceded by dark lines. In the red disc are two or three elongate deep red spots. The dark grey posterior wings have also yellow cilia, and on the underside the costa is broadly red. The antennæ are longer; the femora and tibiæ red. Duponchel's solitary specimen also came from Spain.

Myelois cruentella, H.-S., is well known as the *M. crudella*, Zell. (1865.)

TERAS HIPPOPHAËANA, n. sp., Heyden (E. Z. 1865, p. 377).

Alis anterioribus cinereis, apice obsolete obscurioribus; squamulis parcis, elevatis, parvis, nigricantibus; alis posterioribus nigro-reticulatis.

Exp. al. 10—11 lin.

This species resembles the grey specimens of *T. Tristana*, Hüb., and *Sponsana*, F. The anterior wings are only slightly curved on the costa, broad, with the apex scarcely pointed, silky, dark ashy-grey, sparingly clothed with single raised, small, black scales. The large dark triangle on the costa, which we find in the allied species obliquely truncate, is here very faint, and is continued only a little darker to the inner margin. On its anterior edge is a row of small black spots, and a larger spot about a quarter of the length of the wing from the hind margin. Towards the apex and at the hind margin some very small spots are perceptible. The cilia are concolorous with the wings, and have likewise at their bases a row of indistinct darker spots, and sometimes a paler intersecting line. The underside is unicolorous, paler.

The posterior wings are broad, paler grey, with the veins and a line before the concolorous cilia rather darker. On the underside they are finely reticulated with darker, and this shows through faintly on the upper side.

Head with the antennæ and palpi, and also the thorax, dark grey; abdomen and legs rather paler. Anal tuft of the male short, yellowish-grey; in the female the last segment is more rounded.

In one variety from Ragatz (var. *Ragatzana*, Heyd.), the triangular blotch is extended and occupies the entire apical portion of the wing, and is more blackish, less interrupted with pale spots; the basal portion is whitish, with larger blackish spots at the base, on the costa and below the hinder margin of the triangle.

The larva feeds on *Hippophaë rhamnoides*, especially at the ends of the branches, between leaves spun together in a ball, and here also it changes to the pupa state.

I first found the larva in the middle of August, 1851, at Ragatz, and the moths made their appearance from the beginning of September to the beginning of October. In 1861, I found it about the same time at Neuberg on the Rhine in Baden. (1851.)

TERAS PARISIANA, Guenée, Heyden (E. Z. 1863, p. 342). The larva occurs near Frankfort, Darmstadt, Mayence and Wiesbaden throughout September abundantly on elms, between leaves spun one upon another, and there it also changes to the pupa state.

The imago appears at the end of September and beginniug of October. (1834.)

ARGYROTOXA HOFFMANSEGGANA, Hübner, Heyden (E. Z. 1860, p. 116 (*Conwayana*, Fab.). The larva feeds in October and the beginning of November on the berries of the privet (*Ligustrum vulgare*). It quits its domicile the middle of November and spins in any convenient corner an oval, flat, thin, white cocoon, in which it soon assumes the pupa state.

The imago appears from the beginning to the middle of June of the following year. It is not scarce round Frankfort, and flies in little swarms by day along the privet hedges. (1825.)

P.S.—(E. Z. 1862, p. 176.) According to Kaltenbach the larva feeds also in the seeds of the ash. Here I have not met with it in these seeds.

COCCYX ZEPHYRANA, Treitschke, Heyden (E. Z. 1860, p. 117). The larva feeds in June in the root of *Eryngium campestre;* more rarely it occurs in the stem. At the beginning of July it assumes the pupa state in a thick, grey cocoon, mixed with "frass," in the root or in the stem of the plant, and the imago makes its appearance through a hole in the second half of July.

Not plentiful in the neighbourhood of Frankfort, occurring in open places in woods and on the margins of fields behind Bürgel, near Offenbach. (1830.)

COCHYLIS FLAGELLANA,* Duponchel, Heyden (E. Z. 1862, p. 173). The larva winters full-fed in the stems of *Eryngium campestre,* and the imago appears at the beginning of July; the pupa skin remains sticking with its hinder segments in the dead stems. (1847.)

CONCHYLIS HELVETICANA, n. sp., Heyden (E. Z. 1865, p. 100). I found the larva at the beginning of July at St.

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* See p. 39. This is not *flagellana,* Dup., but a new species *Eryngiana,* Heyd.

Moritz and Pontresina in the capsules of *Gentiana acaulis*, of which it devours the seed. I took many specimens with me to Frankfort, but they died. Afterwards I found one dead *Tortrix* in the box.

My *C. Helveticana*, of which I can give no sufficient diagnosis, agrees very well with Herrich-Schäffer's *Flagellana*, fig. 95, both in size and colouring.

I believe that amongst *C. sanguinana*, Tr., *Flagellana*, Dup., and *Francillana*, F., there are still different species, very closely allied, to be distinguished. It is probable that the larvæ and their different habits may help us in this respect.

C. sanguinana, Tr. (*Baumanniana*, Hb.), is sufficiently distinguished by the broad red fascia from the allied species; its larva feeds in the stems of *Eryngium campestre*.

The larva which I have described as that of *C. Flagellana*, Dup. (E. Z. 1862, p. 173), is not that species. It feeds, like that of *C. sanguinana*, in the stems of *Eryngium campestre*. It is considerably larger than *Flagellana*, Dup. Possibly Herrich-Schäffer's *Flagellana*, fig. 345, may belong to it, but in my numerous specimens, the first fascia is always interrupted towards the costa. I now name my species *C. Eryngiana*.

The *C. Francillana*, F. (Wood, fig. 1152), to which the *Flagellana* of Duponchel probably belongs, feeds in the larva state on the seeds of *Daucus Carota*.

C. dilucidana, Steph., Wilkinson, which is also a closely allied species, feeds in the larva state on the seeds of *Pastinaca sativa*.

Tortrix rutilana, Hübner, Heyden (E. Z. 1861, p. 32). I found the very lazy, hybernated larva at the end of March and beginning of April on juniper, where it lives in a short, tubular cocoon, covered with brown-grey excrement. In this cocoon it changed to the pupa state the beginning of May.

About Frankfort, it is not scarce, especially in the Lower Wood. (1827.)

COCHYLIS MANNIANA, Tr., Heyden (E. Z. 1863, p. 104). I found the larva in September in the Höllenthal in the Black Forest, by streams, in the stems of *Mentha sylvestris.* It is sluggish and hybernates in the stem. The imago made its appearance in the first half of May, the pupa protruding half through the side of the stem, through a hole bored by the larva. (1847.)

PHTHEOCHROA RUGOSANA, Hübner, Heyden (E. Z. 1860, p. 117). The larva is found round Frankfort in the latter half of June and beginning of July, between the spun-together clusters of flowers of *Bryonia dioica,* where it especially eats the small, unripe berries, so that only their outer husk is left. When full fed it quits its abode and makes amongst leaves, or rather eaten into the stem, a narrow, thin, papery white cocoon. As a rule the larva hybernates and is not easy to rear. The imago appears in the May of the following year; once I bred a specimen the same year, at the end of August. (1833.)

PENTHINA POSTREMANA, Zeller, Heyden (E. Z. 1865, p. 378). My attention to this larva was first drawn by the now deceased Herr J. M. Riese in the year 1825. It occurs plentifully near Frankfort in August in the stems of *Impatiens noli-me tangere,* near the root, where it forms a narrow web, and deposits in quantity its brown excrement. The moth appears the beginning of May. (1825.)

Subsequently I have met with the larva in all localities where the *Impatiens* grows, and particularly abundantly in the Black Forest. Herrich-Schäffer has described and figured the different varieties under the name of *P. Heydeniana.*

GRAPHOLITHA VACCINIANA, Zell., Heyden (E. Z. 1865, p. 101). I found the larvæ in great plenty on hedges of barberry (*Berberis vulgaris*), near Speyer. It generally spins the leaves flatly one upon another and gnaws them much, so that the hedges have often quite a brown appearance. At the middle of September the larva quits its abode, and forms a fine, oval, white cocoon, in which to undergo its change to the pupa state.

The imago appeared in-doors in the middle of April. (1861.)

RHOPOBOTA NÆVANA, Hb., Heyden (E. Z. 1865, p. 101). I found the larva in June and the beginning of July very abundant in the Black Forest, especially at Baden-Baden, Rippoldsau and Badenweiler on holly (*Ilex aquifolium*). It lives beneath a leaf which has been bitten off, which is fastened by a few webs to the upper surface of a green leaf, both which are gnawed by the larva. In a slight whitish cocoon it changes to the pupa state between the leaves, or on the earth. The perfect insect appears at the end of July, or the beginning of August.

Although the larva has already been described by Treitschke and others, I conceive this additional description to be not altogether superfluous. (1856.)

GRAPHOLITHA GALLICOLANA, Heyden (E. Z. 1860, p. 118), Zeller (Isis, 1846, p. 255), Herrich-Schäffer (iv. p. 263, fig. 172). [Stephens quotes this as a synonym for *Cos-*

tipunctana; it is probably either that or *Obscurana;* in either case it is a great rarity with us.] The larva occurs on oaks in the galls of *Cynips terminalis,* and is not scarce round Frankfort; it inhabits a space spun round with silk, is full fed in October and produces the imago in the May of the following year, the pupa then protruding half-way through the gall. (1826.)

(Zeller and Herrich-Schäffer each received a specimen of this insect from Senator von Heyden, who also supplied me with a specimen. I am not aware that any other Entomologist has bred this species; but do we pay sufficient attention to the breeding of *Lepidoptera* from galls?—H.T.S.)

COLEOPTERA.

NEW BRITISH SPECIES, CORRECTIONS OF NOMENCLATURE, ETC., NOTICED SINCE THE PUBLICATION OF THE ENTOMOLOGIST'S ANNUAL, 1866.

BY E. C. RYE.

As it seems probable that the undue proportion of space occupied by the *Coleoptera* in last year's "Annual," will now be at least equalled, if not exceeded, I am obliged to compress my introductory remarks and the usual notices of captures; thus avoiding the ordinary reference to climatic influences,—and consequent adverse criticism. Apart, however, from the very numerous discoveries of interesting species recorded in the following pages, there are some captures of insects already known to us as British, but too noteworthy to be passed over without remark. These are,—*Potaminus substriatus*, on the banks of the Trent, and *Cryptocephalus* 10-*punctatus*, in Staffordshire, by Mr. J. T. Harris, of Burton; *Velleius dilatatus*, in the New Forest, by Charles Turner; *Nemosoma elongata*, in Warwickshire (in company with, and evidently parasitic upon, *Hylesinus vittatus*), by Dr. Power; and *Carida flexuosa*, in Scotland, and *Psammodius cæsus*, on the Lancashire coast, by Mr. Sidebotham. The captures of the two latter species are particularly interesting, since both of them have been latterly doubted as being truly indigenous to this country; and, *apropos de Psammodius*, I feel bound to indorse Mr. G. R. Crotch's remarks on withdrawing the insinuation of doubt concerning other species brought forward on Mr. Sidebotham's behalf. It was the number and unexpected character of these species that induced the shadow of a suspicion that there might be some accidental confusion in their localities; but it now appears evident that we have in our unworked midland districts a further mine of Coleopterous wealth.

It will be seen that the register for the past year's work is unusually rich, as I have to record 19 species new to science, and 123 more, new to this country; though of the latter number it is probable that the odd 23, or thereabouts, must be considered as somewhat doubtful. The remainder of my notices consist of numerous alterations in nomenclature, and other notes made since the last "Annual."

This large number must, in a great measure, be attributed to Mr. G. R. Crotch, who has recently (and very shortly before the publication of this volume, so that I am again compelled to hurry over a great quantity of matter) published a 2nd edition of his "Catalogue of British Coleoptera," accompanied by verifications of most of his additions in "Newman's Entomologist," and in a paper communicated to the Entomological Society. Mr. Crotch's notes extend, at the time of my writing this, only to *Cryptocephalus*, so that I shall be obliged to incorporate in the next "Annual" such remarks of his upon the remaining species as are contained in the forthcoming number of the former periodical: indeed, it is only through the courtesy of Mr. Crotch and Mr. Sharp that I am enabled to include in the present volume particulars of the species brought forward by them at the Entomological Society.

It must not be expected, as Mr. Sharp has elsewhere remarked, that we can last at the pace at which we are now travelling. Mr. Crotch's Catalogue is increased by the determination of species contained in the very large collections (Mr. Wollaston's, Mr. Janson's, &c.) acquired by him; and the list is much swelled by the result of Mr. Sharp's residence in Scotland. It is probable that we may still, for a limited period, add to our Catalogue, by strictly examining old collections, by which course also many other points will be cleared up; but, after a time, species new to us will much less frequently occur, and our attention must be directed to synonymic matters. As it is, thanks mainly to Mr. Crotch's exertions, we have rather more of these latter than is required at the present juncture. I have endeavoured, as far as space allows, to notice all the changes made, when accompanied by published reasons; but there remain a large number in Mr. Crotch's Catalogue, for which he gives no explanation,—and, indeed, they mostly speak for themselves. I notice, particularly, that in the case of many of the *Steni*, he (as before) deposes the Stephensian names, attributing, however, the species to *me*, because I recently described them in the Entomologist's Monthly Magazine. This is very likely to induce error; and is, indeed, not strictly fair. I see in De Marseul's last Catalogue (in "L'Abeille") that *S. debilis* is attributed to *me;* whereas the truth is that I have been at some trouble to prove the identity of Herr Dietrich's supposed species of that name with Erichson's *opacus*.

Mr. Crotch's Catalogue is, of course, formed upon the recognised continental classification, and comprises many interesting and grammatically correct changes of generic and other names. It is particularly free from omissions (I as yet only notice one species, *Telephorus flavilabris*, Fall., as absolutely forgotten) and mistakes; and the species are numbered throughout. Its chief features are the entire omission in the great majority of instances, and the extreme abbreviation in others, of the names of the authors of species, which cannot fail to militate severely against its usefulness,—and the erection of "sub-species," a rank new to our lists. Perhaps, also, to these should be added the location of *Necrophorus* in the "*Genera incertæ sedis.*"

I omit any reference to my own list (appended to a slight work of introduction to the study of British Beetles, and published during the past year), as it consists mainly of Mr. Waterhouse's Catalogue, with some few alterations in position, and the addition of the species discovered since the time of publication of the latter.

SPECIES NEW TO SCIENCE.

1. OXYPODA RUPICOLA, Rye, "The Entomologist's Monthly Magazine," vol. iii. p. 66, *described.*

Found by me under stones at the top of "Grayvel," Rannoch. Allied to *O. lentula*, Er., but of a rather deeper black colour, with longer antennæ, the joints of which are not quite so transverse, the thorax not so wide, ths elytra longer, the head more parallel-sided, not being widest behind and contracted in front, as in that species,—and the tarsi (especially the hinder pair) longer and thinner. From *O. longiuscula*, Er., which it resembles in build, it may be known by its uniformly black colour, smaller size, and shorter and slighter antennæ, the joints of which are less conic. There are two other species, *O. islandica*, Ktz., and *O. obscura*, Ktz., to which it must be somewhat allied; the former, however, has shorter elytra and a fusco-testaceous apex; and *O. rupicola* seems sufficiently distinguishable from the latter through its smaller size, darker legs, the dark base to its antennæ (which are, moreover, less stout, and have the apical joint especially less broad), its narrower head, &c.

2. HOMALOTA SAUNDERSI, Rye, Ent. Mo. Mag. vol. iii. p. 121, *described.*

Two male examples of this insect have been taken in a sand-pit near Reigate by Mr. J. A. Brewer. One of these was unfortunately destroyed by an accident whilst I was examining it under the microscope; and the other has been liberally given to me by Mr. Brewer.

It is allied to *H. dilaticornis*, Ktz.; but differs from that species in its rather larger size, darker colour, more strongly punctured elytra, the rather longer apical joint of its antennæ, and the male characters; the penultimate abdominal segment in that sex having in the middle of its upper side two wide and apically truncated tooth-like elevations, projecting beyond the apical margin; and on each side a long, robust, sharp, inwardly curved spine, reaching at the point slightly beyond the middle elevations.

3. HOMALOTA EREMITA, Rye, Ent. Mo. Mag. vol. iii. p. 123, *described.*

This insect appears to be not uncommon in the northern parts of the kingdom, especially in elevated districts. It has been on several occasions erroneously brought forward as *Schistoglossa viduata* (which, however, is properly recorded as British), to which it bears great resemblance, differing (apart from generic characters) in its average larger size, wider head and thorax, shorter elytra, which are, moreover, not quite so thickly punctured, and more elongate antennæ. There are, besides, no evident male characters, as in that species. It is also allied to *H. tibialis;* from which its larger size, longer antennæ, rather longer elytra, more convex and usually more evidently foveolated thorax, and duller appearance, will readily separate it.

4. Gyrophæna Poweri, Crotch, Cat. Brit. Col. ed. 2; id. Proc. Ent. Soc. 19 Nov. 1866 (*described*); Ent. Mo. Mag. vol. iii. p. 167.

Gyrophæna Sp.? 6*——, Waterh. Trans. Ent. Soc. 1861, vol. i. 3rd S. p. iii, xvii.

Taken at Mickleham in the autumn by Dr. Power and myself. It is a small species, allied to *G. fasciata* and *G. gentilis*, but readily distinguishable by its evenly punctured thorax, of which the usual dorsal series are obsolete. Its characters were most exhaustively given by Mr. Waterhouse (*loc. cit.*) five years ago.

5. Philonthus addendus, Sharp, Proc. Ent. Soc. 19 Nov. 1866 (*described*); Ent. Mo. Mag. vol. iii. p. 167.

temporalis, Muls. (*forte*).

Mr. Sharp has captured about two dozen examples of this species at different times, under a heap of freshly-cut grass, on the Corstorphine Hills, near Edinburgh. He considers that it is specifically identical with the insects introduced as British (by me) under the name of *P. temporalis*, Muls.; and, though admitting that it is very difficult, judging only from Mulsant's description, to speak positively on the point, is of opinion that these latter are irreconcileable with that description.

I entirely agree with Mr. Sharp in admitting the difficulty of treating the question of *P. temporalis* and its allies with any degree of certainty. Mulsant's description, *more suo*, though more than sufficiently prolix, exhibits a curious avoidance of anything like tangible characters; and it was with considerable hesitation, and preferring a possibly erroneous British record to the risk of increasing specific synonomy, that I brought forward the insect as I did. My specimen (given to me by Mr. Bold) certainly seems incapable of separation from an example of *P. addendus* given to me by Mr. Sharp; but, at the same time, a long and careful examination, both by that gentleman and myself, failed to separate the former specimen satisfactorily from another belonging to him, and named *temporalis* by a continental authority.

My own impression is entirely in accord with Mr. Sharp's, viz., that there are certain species of the *æneus* group (*carbonarius*, Gyll., *temporalis*, Muls., *tenuicornis*, Muls. and *punctiventris*, Ktz.) which are in a state of confusion, and some of which are not unlikely to be suppressed eventually. It is to be hoped that Mr. Sharp's insect, possessing—as it does—the merit of being distinguishably described, will be lucky enough to escape that fate.

6. LATHROBIUM JANSONI, Crotch, Cat. Brit. Col. ed. 2; id. Proc. Ent. Soc. 19 Nov. 1866 (*described*); Ent. Mo. Mag. vol. iii, p. 168.

Mr. Crotch states that this insect was sent to Dr. Kraatz by its captor, Mr. Janson, under the MS. name "*Hardii*," and that it was returned as new.

It appears to be very close to *L. pallidum*, but to differ from that species in its darker colour and stronger punctuation, and by its elytra being scarcely shorter than its thorax.

7. STENUS SHEPHERDI, Crotch, Cat. Brit. Col. ed. 2 (*Sheppardi*); id. Proc. Ent. Soc. 19 Nov. 1866 (*described*); Ent. Mo. Mag. vol. iii, p. 168.

Found at Hammersmith Marshes by Mr. Edwin Shepherd, and communicated to Dr. Kraatz, who returned it as certainly distinct from any known species.

It appears to be allied to *S. melanarius*, Steph. (*cinerascens*, Er.), but to be larger and more shining than that species, and having the palpi black, except the basal joint, which is yellow. From *S. buphthalmus* it seems to be at once known by its sparingly punctured abdomen. The middle keels of its abdominal segments appear to be strongly elevated.

8. STENUS ANNULATUS, Crotch, Cat. Brit. Col. ed. 2; id. Proc. Ent. Soc. 19 Nov. 1866 (*described*); Ent. Mo. Mag. vol. iii, p. 168.

Dr. Kraatz appears to have returned, as new, the insect pointed out in my descriptions of our *Steni* (Ent. Mo. Mag. vol. i, p. 92) as probably undescribed, and distinct from *S. impressus*, from which it varies in its longer elytra and the greater amount of dark coloration at the apex of the posterior femora. Mr. Crotch even suggests that it may be a winged form of that insect, and states that it must be close to *S. flavipalpis*, Thomson, though from his notes on inspecting that author's types three years ago, it would seem that the latter must be near *St. impressipennis* (*ossium*).

From Thomson's description it seems to me impossible that his *flavipalpis* can be reconciled with either the latter species or *S. annulatus*.

In De Marseul's Cat. (ed. 2), the very suggestive name of *S. annulipes* (erroneously attributed by him to Erichson, instead of Heer) is given as a synonym of *S. impressus*. It seems, however, to have nothing to do with that species, and to be very close to *S. geniculatus*.

9. LESTEVA SHARPI, Rye, (Cat. "British Beetles") Ent. Mo. Mag. vol. iii, p. 124 (*described*).
monticola, Sharp, nec Kies.
collina, Crotch, Cat. ed. 2; ?? Haliday.

Taken by Mr. Sharp in various Scotch localities; in numbers by that gentleman with Mr. Henderson at Gareloch-head; and by Mr. T. Blackburn and myself at Rannoch.

It is apparently very closely allied to *L. monticola*; in which, however, the punctuation of the elytra should be finer than in *L. bicolor*, with the hinder angles of the thorax not so acute, and the pubescence grey; whereas in *L. Sharpi* the punctuation is stronger than in *L. bicolor*, the hinder angles equally acute, and the pubescence yellowish.

From the latter species it may be distinguished by its rather longer antennæ, which are of a clearer red; its longer thorax; the rather wider and stronger punctuation, and evidently longer pubescence, of its thorax and elytra; and the greater width behind of its abdomen and elytra, the latter being also apparently shorter than in *L. bicolor*.

It is, moreover, a more bulky insect, and lighter in colour; and the two depressions between its eyes are more strongly marked.

L. Sharpi appears not to be capable of association with the *L. oblonga* of Mots., and Mr. Haliday's few words of reference to his *collina* (of which he admits a suspicion that it is only a var. of *bicolor*) cannot be considered as applying to it with the least chance of correctness.

10. CRYPTOPHAGUS WATERHOUSEI (Frontisp. fig. I), Rye, Ent. Mo. Mag. vol. iii, p. 101 (*described*).
Cryptophagus 16 ——, *Sp.?* Wat. Cat.

Described from a single specimen, taken by Mr. G. R.

Waterhouse in May, 1857, on the windows of one of the open corridors leading to the Crystal Palace, in company with *C. badius, acutangulus* and *vini*, which often swarm there.

It is somewhat allied to *C. vini*, but differs from that species in its larger size, more cylindrical shape, finer punctuation and shorter pubescence, and especially in the structure of its thorax, the anterior lateral projections of which are carried back for about a third of its length in almost a straight line, parallel with the sides, until they end in a minute acute point;—suggesting the idea of the middle lateral tooth usually exhibited by *Cryptophagus* being confused with the prominence of the anterior angle. Below this acute point the sides are strongly and straightly narrowed behind, and exceedingly finely crenulated.

11. **Atomaria Wollastoni**, Sharp, Proc. Ent. Soc. 19 Nov. 1866 (*described*); Ent. Mo. Mag. vol. iii, p. 168.

Found very rarely by Mr. Sharp, on the banks of a small loch near Edinburgh.

It appears to be very closely allied to *A. nana* (*nigriventris*, Wat. Cat.), but with the punctuation closer and much finer, and the pubescence much shorter and more delicate. In the latter respect it apparently more resembles *A. elongatula*, Er., from which, however, its form and facies render it very distinct. From *A. fumata* it seems to be distinguished by its finer punctuation, more delicate pubescence, and longer and thinner antennæ.

12. **Telephorus darwinianus** (Frontisp. fig. 3, m.; 3*, fem.), Sharp, Proc. Ent. Soc. 19 Nov. 1866 (*described*); Ent. Mo. Mag. vol. iii, p. 168.

A considerable number of this species have been taken by

Mr. Sharp, on the shores of the Frith of Forth at Aberlady, *under seaweed,* and never on plants or herbage. It has also been taken at the same place by Mr. R. Hislop.

It appears to be closely allied to *T. lituratus,* but to be capable of distinction from that insect by its more compact and robust build, its much shorter and stouter antennæ, in which the third joint is not so much longer than the second, its proportionably longer thorax, and its shorter elytra.

Mr. Sharp observes that some of the females have the elytra and antennæ deformed (reminding one of the apterous females in some of the neighbouring genera), and seem to be in great favour with the males.

13. TELEPHORUS SCOTICUS, (Rye, Cat. "British Beetles") Sharp, Proc. Ent. Soc. 16 Nov. 1866; Ent. Mo. Mag. vol. iii, p. 168.
Telephorus 21* *Sp.* —— ? Wat. Cat.
femoralis (?), Crotch, Cat. ed. 1; nec Brullé.
assimilis, Crotch, "The Entomologist," ii, 168; nec Payk.
figuratus, Crotch, Ent. iii, p. 48; nec Mann.

This insect appears at last to have found a correct "local habitation and a name." It is, of course, familiar enough to our readers by this time.

14. ANTHICUS SALINUS, Crotch, Cat. Brit. Col. ed. 2; id. Proc. Ent. Soc. 19 Nov. 1866 (*described*); Ent. Mo. Mag. vol. iii, p. 168.
Anthicus 2 *Sp. nov.?* Wat. Cat.

Found near Lymington, in the Salterns, by Mr. Waterhouse; also at Gravesend.

Allied to *A. humilis,* Germ.; from which it is stated to be very readily distinguished by its thorax being wider in front, and by its more delicate and closer punctuation.

15. SITONES ONONIDIS, Sharp, Proc. Ent. Soc. 19 Nov. 1866 (*described*); Ent. Mo. Mag. vol. iii, p. 168.

Mr. Sharp took a great number of specimens of this apparently undescribed insect off *Ononis spinosa* at Herne Bay, in September, 1865; where, also, Dr. Power subsequently found it.

It seems to be very closely allied to *S. suturalis*, differing from that species in being rather larger, less cylindrical, not so convex, and clothed with *scarcely* metallic scales: its eyes, moreover, are a little less prominent, and, when viewed laterally, are seen to be narrower in their transverse diameter, and not so circular in outline, but more elliptical; the elytra are not so strongly punctate-striate, and the interstices are quite flat, instead of being slightly convex.

Mr. Sharp appears to have found *S. suturalis* at the same time and place, but that species was always on a species of vetch; and the two insects were strictly confined to their appropriate food-plants.

It would seem as if the *Sitones* described by Mr. Sharp equally merited the name of *darwinianus* with the *Telephorus* characterized by that gentleman.

16. TRICHOPTERYX SARÆ, Matthews, Ent. Mo. Mag. vol. ii, p. 243 (*described*).

Two specimens of this fine insect (named in honour of Mrs. Matthews) were taken five years ago in Nottinghamshire by the Rev. H. Matthews.

It appears to differ from every other European species in its large size (½ lin.), short, wide and very convex build, black and shining head and thorax and rufo-castaneous elytra; its thorax, moreover, is very large and convex, and ornamented with very minute distinct tubercles, arranged in regularly sinuated rows, with the interstices alutaceous; its legs are very short, and the apical joint of its antennæ is much elongated.

17. TRICHOPTERYX WATERHOUSII, Matthews, Ent. Mo. Mag. vol. ii, p. 244 (*described*).

Described from two examples in Mr. G. R. Waterhouse's collection, taken many years ago, and of which the exact locality is unregistered.

It appears to be allied to *T. Chevrolatii* (*pygmæa*, Er.) and *T. Guerinii*, but to be distinguishable from these and all other species of the genus by its oblong, sub-parallel, somewhat depressed build, dull black head and thorax, and testaceous elytra, and by the sculpture of its thorax, which is covered with small distinct tubercles, irregularly arranged in close rows, with the interstices slightly alutaceous.

18. TRICHOPTERYX JANSONI, Matthews, Ent. Mo. Mag. vol. ii, p. 245 (*described*).

Described from a single specimen taken some years ago by Mr. Matthews near Gumley, according to whom it resembles the Ceylonese species *T. invisibilis*, Nietner, more than any other, but may be readily distinguished from all by its sub-parallel, cylindrical form, very wide head, and deep black colour. Its thorax appears to be ornamented with remote irregular sinuated rows of tubercles, the interstices being deeply alutaceous and very shining; and its elytra are deeply asperate in remote sinuated rows.

19. PTILIUM CONCOLOR, Sharp, Proc. Ent. Soc. 19 Nov. 1866 (*described*); Ent. Mo. Mag. vol. iii, p. 168.

Mr. Sharp took a single specimen of this very remarkable insect among coarse sand and shingle on the banks of the

Bowmont, at Yetholme; more examples were seen (though not captured) in company with *Thinobius longipennis*.

It may be recognized by its narrow and parallel form, its thorax being evidently broader than long, and very much narrowed behind, and its elytra not dilated at the sides, and scarcely wider, but more than three times longer, than the thorax. It is ¼ lin. long, and of an opaque black colour.

The Rev. A. Matthews has examined this specimen, and agrees with Mr. Sharp in considering it as undescribed.

SPECIES NEW TO BRITAIN.

1. AMARA ALPINA, Fab.; Gyll., Ins. Suec. 2, 103, 21 (*Harpalus*); T. Blackburn, Ent. Mo. Mag. vol. iii, p. 92.

A rather worn specimen of this most interesting insect was taken by Mr. Blackburn on the summit of "Grayvel," Rannoch, early in July last; and the Rev. T. A. Marshall informs me that he, also, found an example of it at the same place. The species must be very rare there; for I was collecting at the same time on the same mountain, and turned over great quantities of stones, &c., in all sorts of places on it, without finding a single specimen; and the amount of work expended on "Grayvel" by the above two gentlemen and myself on our repeated excursions to it would surely have produced more than two examples, if the insect were at all common. I expect, however, that we were too late in the year for the main body of the brood.

Although placed by De Marseul in the sub-genus *Cyrtonotus*, it does not, to my eye, suggest any idea of resemblance to our species of that section; but is exceedingly like *A.* (*Bradytus*) *apricaria*, from which its larger size, the deep impressions on the front of its head (which is very wide).

and the deeper punctuation on each side of the base of its thorax (the absolute punctured space being, however, smaller), will readily distinguish it. Mr. Blackburn's insect has dull reddish elytra, with the suture broadly and obscurely darker; being one of the numerous varieties mentioned by Gyllenhal and Thomson.

2. ILYBIUS SUBÆNEUS, Er., Col. March. i, 156, 6; Redt., Faun. Austr. 95, 5; J. A. Power, Ent. 29, p. 79.

Dr. Power records the capture, near Peckham, of a female *Ilybius* which he refers to this species, and states to be nearly allied to *I. fenestratus*, but darker in colour and more contracted and "lumpy" in form.

Redtenbacher differentiates it from *fenestratus* by its being broadest *at* (instead of *behind*) the middle, its blacker colour, and the *narrow* red margin of its thorax and elytra.

Dr. Power also notices, in addition to the series of longitudinal plicæ on the underside of the male in this genus, a character in the last segment of the female. He remarks that in that sex of *I. fenestratus* there is a mere triangular notch, with a ridge extending from it; whereas in the now recorded insect the notch has no distinct ridge connected with it, but has its margins flattened "in the most remarkable manner."

3. HYDROPORUS SANMARKII, Sahlb.

Mr. Crotch ("The Entomologist," No. 31, p. 110) now ranks this insect as a "sub-species," instead of a variety, of *H. rivalis*, Gyll., as in the 1st ed. of his Catalogue. He states that varieties of *rivalis* are often confused with it; and that he can see no difference except in coloration.

4. **Hydroporus brevis**, Sahlb., Nov. Col. Fenn. Spec. p. 3; Thoms., Skand. Col. ii, 26, 28; G. R. Crotch, Cat. Brit. Col. ed. 2.

According to Thomson this species is almost as large, but not so oval, as *H. nigrita*, Fab., having the sides of the thorax more delicately margined, and the disc smoother, the elytra almost glabrous, and the head pitchy.

5. **Hydroporus neglectus**, Schaum, Stett. Ent. Zeit. 1845, p. 409; J. A. Power, Ent. 26, p. 43.

Taken by Dr. Power in a pit near Burnt-Ash Lane, Lee, where it has also been found by Messrs. Douglas and Scott.

It is one of our smallest unspotted species, and allied to *H. tristis* and *H. umbrosus*, from the former whereof it may be distinguished by its much smaller size, its more depressed and less parallel form, and the greater curvature of the sides of its thorax; and from the latter by its smaller size, more elongate and parallel form, entirely ferruginous legs and head, and less pubescent, more finely punctured elytra.

6. **Gyrinus colymbus**, Er., Col. March. 191, 2; G. R. Crotch, Proc. Ent. Soc. 19 Nov. 1866.

Mr. Crotch records a few specimens of this insect, found among *G. marinus* (females) in his collection; and states that the red reflexed margin at once distinguishes it.

7. **Gyrinus opacus**, Sahlb., Ins. Fenn. 4, 47, 3; G. R. Crotch, loc. cit.

Mr. Crotch states that M. Scriba records this species as English in his paper (Stett. Ent. Zeit.); and adds that it appears to be not uncommon, and to be most nearly allied to *G. marinus*. Gyllenhal, indeed, seems to doubt whether it be distinct from that species. The elytra seem to be darker than in the other species.

8. **Phytosus balticus**, Kraatz, Berlin. Ent. Zeit. 1859, 52; Wollaston, Col. Atl. 455, 1249; Rye, Cat. "British Beetles"; G. R. Crotch, Cat. Brit. Col. ed. 2.

This is the insect, taken in the north of England (especially by Messrs. Bold and M. Young), usually known to us as *nigriventris*, Chevr.

The latter species also is included in Mr. Crotch's Cat.; and, as I am informed, comes from the South Coast. I have, however, *balticus* from the Isle of Wight.

The true *P. nigriventris* seems to be a little larger and broader than *P. balticus*, with the elytra less parallel, and the limbs somewhat longer; it is exceedingly pale rufo-testaceous, with the fifth segment (and the whole or part of the fourth and sixth segments) of the abdomen black.

9. **Aleochara grisea**, Kr., Ins. Deutschl. ii, 96 (note); G. R. Crotch, Cat. Brit. Col. ed. 2.
Fauvelii, Rye, Cat. "British Beetles."

This insect, taken not uncommonly on the Scotch coasts, also by me at Broadstairs, and by Mr. Waterhouse at Southend, has long been in our collections as a new species, through the erroneous impression that Kraatz's *grisea* was a synonym of *Kirbii*, Steph.

It is readily distinguished from the latter by its more distinct punctuation (especially visible on the head); and from *A. obscurella*, Grav., by its much longer and darker antennæ, and more evident punctuation.

Mr. Crotch deposes *Kirbii* as a synonym of the subsequent *algarum* (I presume, of Fauvel).

10. **Oxypoda soror**, Thomson, (Öfv. 1855) Skand. Col. iii, 24, 1; E. C. Rye, Ent. Mo. Mag. vol. iii, p. 66.

This insect, prior to its being found by me in July last under stones at the top of "Grayvel," Rannoch, was taken in some numbers by Mr. Morris Young.

When alive it is very pale, with the exception of a trifling infuscation in the middle of the abdomen; and this light colour, added to its short elytra (which are not so long as the thorax) and long antennæ, which are distinctly as long as the head and thorax, and but slightly thickened towards the apex, readily distinguishes it from all our other small testaceous species.

11. **Homalota hypnorum**, Kies., Stett. Ent. Zeit. xi, 219; Kraatz, Ins. Deutschl. ii, 203, 3; D. Sharp, Proc. Ent. Soc. 19 Nov. 1866.

micans, Muls.

Mr. Sharp records the capture by himself of a single specimen of this handsome species in Glen Cannich, Inverness-shire; and I believe that a rather small specimen in my own cabinet, also from Scotland, must be referred to it.

It is 1¾ lin. long, linear, black and shining, with testaceous legs, stout antennæ, and brown, closely and moderately finely punctured elytra. The second abdominal segment in the male has a slight tubercle in the middle of its upper side; and the penultimate segment is slightly emarginate.

12. **Homalota crassicornis**, Gyll., Ins. Suec. iv, 486, 20—21 (*Aleochara*); Thomson, Öfv., Skand. Col. iii, 56, 2 (*Liogluta*); D. Sharp, Proc. Ent. Soc. 19 Nov. 1866.

granigera, Kies.; Ktz., Ins. Deutschl. ii, 207.

Three specimens have been taken by Mr. Sharp among dead birch leaves in Glen Cannich.

Allied to *H. pagana*, but distinctly smaller, darker, and with the abdomen more sparingly punctured.

In the male the penultimate segment of the abdomen is roughened with elevated points on the upper surface, and has a tooth-like granulation on each side.

13. Homalota subtilissima, Kraatz, Stett. Ent. Zeit. xv, 126; Ins. Deutschl. ii, 230, 31; D. Sharp, Proc. Ent. Soc. 19 Nov. 1866.

Mr. Sharp has found this species in several Scotch localities, among clean sand on the banks of rivers and lochs.

It has very much the facies of a small *Thinobius;* and from its very small size ($\frac{3}{5}$ lin.), linear, sub-depressed shape, yellowish colour and slender antennæ, can be readily separated from our recorded species of *Homalota.*

14. Homalota pallens, (Ferrari) Redt., Faun. Austr. 131, 48; Kraatz, Ins. Deutschl. ii, 261, 67; D. Sharp, Proc. Ent. Soc. 19 Nov. 1866.

Mr. Sharp records the capture by himself of three or four specimens of this insect on the banks of the Avon, near Falkirk.

It is closely allied to *H. exilis*, but distinctly smaller than that species, uniformly rufo-testaceous (with the exception of the fourth and fifth segments, which have a pitchy tinge), moderately shining, and with the elytra shorter, being scarcely as long as the thorax.

This insect appears to be of excessive rarity; only one specimen being known to Redtenbacher and Kraatz.

15. Placusa complanata, Er., Gen. et Spec. Staph. 194, 1 (?); G. R. Crotch, Cat. Brit. Col. ed. 2.

This species appears to be larger and flatter than *P. pu-*

milio, with the intermediate joints of the antennæ but little broader than long, the outer apex of the elytra sinuated, &c.

16. TACHINUS FRIGIDUS, Er., Gen. et Spec. Staph. 256, 21; Kraatz, Ins. Deutschl. ii, 401, 3 (?); D. Sharp, Proc. Ent. Soc., 19 Nov. 1866.

Mr. Sharp has taken in Inverness-shire a *Tachinus* (female) which he considers different to any of our recorded species, and thinks may probably be referred to the above insect, of which only three specimens, all males, were known to Dr. Kraatz.

In Mr. Sharp's specimen, which is altogether smaller and rather more finely punctured than its allies, the dorsal plate of the seventh abdominal segment ends in three long teeth, of which the middle one is the longest, its thin apical part being longer than in *T. proximus* or *T. rufipes*. The notch between the middle teeth of its ventral surface is not simple, but has a triangular projection at its base, as in *T. pallipes*.

17. BRYOPORUS RUFUS, Er., Col. Mar.; Gen. et Spec. Staph. 273, 8; Kraatz, Ins. Deutschl. ii, 454, 2; E. C. Rye, Ent. Mo. Mag. vol. iii, p. 66.

I have referred to this species, though with some slight doubt, an insect taken by myself in moss at the top of "Grayvel" near Rannoch, in July last. The Reverend T. A. Marshall also took another (and much smaller) example of it in my company; and Messrs. Sharp and Crotch about the same time found it under similar circumstances in Inverness-shire. My example is of the size and build of *Mycetoporus punctus*; but Mr. Marshall's is considerably less than that species. The structure of its palpi is, however, that of *Bryoporus*; and, as far as colour goes, it would seem to point to the more darkly tinted *B. cernuus*, being pitchy-black, with the edges of the thorax and elytra and margins of the abdominal segments lighter; but the approximation of its thoracic punctures to the fore and hind margins, the greater length of its elytra,—the punctuation of the striæ of which is somewhat obsolete, and of the interstices both irregular and obsolete,—and the evident thickening of its antennæ (Er., loc. cit. p. 273; a character not noticed by Kraatz or Thomson), all point to *B. rufus*, of which, according to the preponderance of characters it seemed to me to be a not previously noticed dark variety. The darkest form as yet recorded has the head and breast pitchy-black.

In default of its entirely agreeing with *B. rufus* (and I am now informed that it does not exactly accord with examples of that species from the Continent), it must be considered as an undescribed species; but, with so many points in common with that insect, I could not with propriety (in spite of the strong difference in colour) have brought it forward as new.

B. rufus appears to have been already in our lists; the *B. castaneus* of Hardy and Bold (*Hardii*, Crotch), having originally been brought forward under that name.

18. MYCETOPORUS TENUIS, Rey et Mulsant, Opusc. Ent. 2^{me} Cah. 1853, 67; Fairm. et Lab., Faun. Ent. France, 492, 2; D. Sharp, Proc. Ent. Soc. 19 Nov. 1866.

Mr. Sharp has found this species on the top of Cheviot, and also on a mountain between Strach-farrar and Strach-cannich, Inverness-shire; and remarks that his examples are larger than Mulsant's description would lead one to expect.

It appears to be entirely bright rufo-testaceous and about the size of *M. clavicornis*, but of a more slender build, with the antennæ less thickened, the abdomen less strongly punctured, and an accessory row of punctures near the dorsal stria.

19. Quedius brevicornis, Thomson, Skand. Col. ii, 175, 5 (*Microsaurus*)?; D. Sharp, Proc. Ent. Soc. 19 Nov. 1866.

Mr. Sharp states that the insect which he attributes with doubt to this species (on account of his inability to perceive in it the character specified by Thomson as to the position of the hinder frontal setæ, which should be nearer to the neck than to the eyes) is distinguished from varieties of *Q. fulgidus* with red elytra by the entirely black colour and shorter articulations of its antennæ; also that Dr. Power has long recognized it as specifically distinct from *Q. fulgidus*, which occurs in cellars and outhouses, whilst the above insect is found under bark and at ths sap of trees. This locality test cannot, of course, be much relied upon; in my own limited experience I have never found *Q. fulgidus* in either cellars or outhouses, but often about trees.

20. Philonthus tenuicornis, Rey et Muls., Opusc. Ent. 2^e Cah. 1853, 74; Scriba, Berl. Ent. Zeit. 10, 1866, p. 293; E. C. Rye, Ent. Mo. Mag. vol. iii, p. 139.

Recorded (amongst other localities) from *Ireland* by Herr Scriba (loc. cit.), who states that it may be known from *P. carbonarius*, Gyll., by its more slender antennæ, of which the penultimate joints are as long as broad, and by the sixth abdominal segment of the male not being emarginate beneath.

The usual confusion attending insects of the *P. æneus* group is here shown; inasmuch as the very characters given by Herr Scriba to distinguish his insect from *P. carbonarius* are the chief of those by which Thomson states the true *P. carbonarius* of Gyllenhal may be known!

Mr. Crotch, who has all the advantages of the best continental advice, in the second edition of his "Catalogue" quotes the insect known to us as *punctiventris* (originally introduced by Mr. E. W. Janson) as the true *tenuicornis;* and I certainly have for some time had foreign specimens so labelled, entirely agreeing with our species of the former name.

21. PHILONTHUS CONCINNUS, Grav., Col. Micr. Bruns. 21, 25; G. R. Crotch, Cat. Brit. Col. ed. 2.

Gravenhorst, whose original description is scarcely intelligible, at p. 84 of his Mon. Col. Micr., states that this species is intermediate between *P. varians* and *P. ebeninus.*

22. XANTHOLINUS LENTUS, Grav.; Er.; Kraatz, Ins. Deutschl. ii, 644, 15; G. R. Crotch, Cat. Brit. Col. ed. 2; Proc. Ent. Soc. 19th Nov. 1866.

"One specimen under bark at Invercannich, Inverness-shire."

X. lentus appears to be like a bulky specimen of *X. ochraceus* in size and build, but flatter, with the head and thorax broader and black, and the elytra and legs shining reddish-yellow.

23. OTHIUS MYRMECOPHILUS, Kies., Stett. Ent. Zeit. iv, 308; Ktz. Ins. Deutschl. ii, 658, 6; G. R. Crotch, Cat. Brit. Col. ed. 2.

Seems to be usually somewhat narrower and more convex than *O. melanocephalus*, but much darker, being pitchy, with a black head and fuscous elytra and apex; the thorax, however, is never uniformly pitchy, but has a spot of brown. Its chief character seems to consist in the position of the intermediate pair of thoracic punctures, which are not more remote from the hinder pair than from the anterior margin.

24. LITHOCARIS FERRUGINEA, Er., Gen. et Spec. Staph. 613, 6; G. R. Crotch, Cat. Brit. Col. ed. 2.

Appears to be distinguished from its allies, *L. brunnea* and *L. fuscula*, chiefly by the strong and very close punctuation of the head.

25. STENUS GLACIALIS, Heer, Faun. Col. Helv. p. i, fasc. 2, 224, 35; Ktz. Ins. Deutschl. ii, 787, 58; E. C. Rye, Ent. Mo. Mag. vol. iii, p. 21.
muscorum, Fairm. (De Mars. Cat., l'Abeille).

I have referred to this species a female specimen taken by Mr. R. Hislop, in August, 1865, on the Cheviots. It is at first sight strongly suggestive of *S. lustrator*, on account of its size, colour and very slender limbs; but is not in the same section as that insect, having the penultimate joint of its tarsi bilobed, though narrowly and minutely only. It is black, shining, sparingly and very strongly punctured, with thin, long pubescence, testaceous palpi and legs, and the femora broadly fuscous at the apex. Mr. Hislop's insect appears to be much abraded, so that the long pubescence is only evident towards the sides of the elytra.

The size, 1½ lin., given for this species by Kraatz is (from his description) evidently a misprint for 2½ lin.

26. TROGOPHLŒUS SUBTILIS, Er., Col. March.; Gen. et Spec. Staph. 812, 25; G. R. Crotch, Cat. Brit. Col. ed. 2.

Seems to be allied to *T. tenellus*, but with entirely testaceous antennæ, and the thorax rather longer and distinctly narrowed towards the base.

27. **THINOBIUS LINEARIS**, (Waltl.) Kraatz, Ins. Deutschl. ii, 883, 2; D. Sharp, Proc. Ent. Soc. 19 Nov. 1866.

Found in Scotland by Mr. Sharp, in company with *Homalota subtilissima* (to which it bears a great superficial resemblance) among the clean sand at the banks of rivers and lochs. I have also found it among some insects taken by Mr. T. Wilkinson at Scarborough.

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28. **ANTHOPHAGUS PYRENÆUS**, Ch. Brisout de Barneville, in Grenier's Cat. Col. de Fr. et Mat. &c. 41, 54; T. Blackburn, Ent. Mo. Mag. vol. iii, p. 139.

Mr. Blackburn has (accompanied by remarks exhibiting a most judicious caution) brought forward this species on the authority of a few examples, answering to M. Brisout's description, and taken on Grayvel, Rannoch, in July last. The distinguishing characters between *A. pyrenæus* and *A. alpinus* given by him are that, in the former, the thorax is a little more contracted behind, and, with the elytra, somewhat more deeply punctured; also that the head in the male is more deeply emarginate, with the mandibles much larger and more suddenly dilated at the base, and the frontal horns longer, more slender, and inclined somewhat outwards.

Supposing Mr. Blackburn's insects to be identical with M. Brisout's (though the characters given do not entirely accord with the description), I should certainly be inclined to consider them as merely well developed males of *A. alpinus*; with which, in the present instance, they must have been taken in company indiscriminately. //

29. **Deliphrum crenatum**, Grav., Micr. 114, 4 (*Omalium*); Erichson, Gen. et Spec. Staph. 873, 2; G. R. Crotch, Ent. 27, p. 60.
Omalium 14 *Sp*——*?* Wat. Cat.

Taken in Scotland by Turner. It is quite unlike any other British species, being very much larger than, and of a different facies to, the little *D. tectum;* with which, as Mr. Crotch aptly says, it appears to have no generic characters in common. It has much the appearance of *Homalium florale;* from which it may be readily distinguished by its longer antennæ, punctate-striate elytra, and sparingly but visibly punctured abdomen.

30. **Homalium septentrionis**, Thoms., Skand. Col. iii, 211, 2; W. Henderson, Ent. Mo. Mag. vol. ii, p. 205.

Mr. Henderson records the discovery of a single example of this insect among some captures made by himself in the Isle of Arran in August, 1864; and Mr. Sharp has also found a specimen among his Rannoch captures. It differs from *H. rivulare* in being much more strongly and closely punctured, and less shining, with its elytra narrower in proportion to the thorax, the sides of which are less rounded, and by the five basal joints of its antennæ being red. Its much stronger punctuation will serve to distinguish it from *H. riparium,* another of its allies.

31. **Homalium Heerii**, (Chevrier) Heer, Faun. Col. Helv. i, 571, 3 (*Phlœonomus);* T. Blackburn, Ent. Mo. Mag. vol. iii, p. 93.

Found in some numbers by Mr. Blackburn in fungi on rotten birches, near Rannoch, in July last; one or two specimens, also, were taken in the early part of the year at the same place by Messrs. Sharp and Crotch. These Scotch specimens closely resemble *H. iopterum* (*lucidum*, Er.), but differ in being rather smaller and more linear, with the thorax rather more contracted behind, and more invariably bifoveolate, and the punctuation throughout closer and not so deep. The antennæ, also, are more slender, the apical joints not being so transverse.

Heer omits to mark the closeness of the punctuation, and does not notice the thoracic foveæ.

I am informed that Chevrier's types of *H. Heerii* are nothing but *H. concinnum*; with which, however, Heer's description cannot possibly accord.

32. ANTHOBIUM LAPPONICUM, Mann., Brach. 52, 13; Thoms., Skand. Col. iii, 203, 2; G. R. Crotch, Cat. Brit. Col. ed. 2.

I presume this to be founded on a specimen taken by Mr. Sharp at Rannoch. The species is distinguished from *A. minutum* by its shorter testaceous elytra, and its delicately and less thickly punctured thorax, which is foveolated at the base, and slightly channelled on the disc. It seems to frequent *Caltha palustris*.

33. MEGARTHRUS BELLEVOYII, Saulcy, Ann. de la Soc. Ent. de France, 1862, 70; G. R. Crotch, Cat. Brit. Col. ed. 2.

sinuatocollis, Lac., var., De Mars.; Crotch, Cat. ed. 1.

34. ANISOTOMA SILESIACA (Frontisp., fig. 4), Kraatz, Stett. Ent. Zeit. 1852, 380; D. Sharp, Proc. Ent. Soc. 19 Nov. 1866.

Mr. Sharp captured a single specimen of this fine insect at Invercannich, at the foot of Glen Affrick, Inverness-shire, in July last. The species was formerly introduced by Mr.

Crotch on the authority of a large specimen of *A. ovalis*, named *silesiaca* by a continental authority.

This insect is allied to *A. furva*, and has very strongly punctured elytra. The male is readily distinguishable by its strongly widened middle tarsi, undentate posterior femora, and not elongate, slightly arched, posterior tibiæ. The female differs from the same sex of *A. Triepkii* and *A. dubia* by its darker colour, more ovate and convex build, and narrower, posteriorly truncate thorax; and from *A. obesa* by its darker club, much narrower and anteriorly contracted thorax, &c.

35. GNATHONCUS (SAPRINUS) PUNCTULATUS, Thoms., Skand. Col. iv, 242, 2; G. R. Crotch, Cat. Brit. Col. ed. 2; Ent. 32, 123; Proc. Ent. Soc. 19 Nov. 1866.

A single specimen taken near London by Mr. Janson. It appears to be much smaller than even the smallest *S. rotundatus*, and to have no trace of the sutural stria.

36. EPURÆA IMMUNDA, Er., Germ. Zeits. iv, 269, 9; id. Ins. Deutsch. iii, 145, 6; G. R. Crotch, Cat. Brit. Col. ed. 2; id. Proc. Ent. Soc. 19 Nov. 1866.

Mr. Crotch records the capture of nine specimens of this insect under birch-bark, at Invercannich, Inverness-shire, in the summer of this year.

It is smaller than *E. deleta*, less broadly margined, of a saturated reddish-yellow colour, and clothed with more scanty, finer, and more depressed yellowish pubescence.

37. EPURÆA VARIEGATA, Herbst; Er., Ins. Deutschl. iii, 146, 7; T. Blackburn, Ent. Mo. Mag. vol. iii, p. 93.

Four specimens of this handsome insect were taken by Mr. Blackburn from fungi on rotten birches near Rannoch, in July last; but, according to Erichson, its habitat is the exuding sap of oaks.

The well defined maculation of its elytra, its reddish colour, and broader and more convex shape, readily distinguish it from *E. obsoleta*, which often has a more or less evident spot on its elytra. The common *E. æstiva* frequently exhibits a dark mark on the disc of the elytra, and in this condition (with other species liable to discoloration, or to the appearance of an elytral spot through the folding of the wings) seems to be not unfrequently mistaken for the true *E. variegata.*

Although, from the marked nature of the preponderating characters, there can be little doubt that Mr. Blackburn's insects are rightly named, yet there are one or two points in which they differ from the Erichsonian description. Of these the most worthy of notice is the size of the apical joint of the antennæ, as the relative width, &c., of the claval articulations is so constantly used as a specific test in this genus. In Mr. Blackbnrn's specimens the apical joint is slightly darkened and rather narrower than the two preceding; whereas all three should be of equal size, and the same colour as the body, according to Erichson. The latter author, also, omits to notice the somewhat abrupt narrowing behind of the thorax which is exhibited in these Scotch specimens.

38. **Meligethes Kunzei**, Erichs., Ins. Deutschl. iii, 182, 15; E. C. Rye, Ent. Mo. Mag. vol. iii, p. 47.

I have a specimen, taken in the London district, which is apparently correctly referred to this species.

It resembles *M. difficilis* in size and build, but has even more widely and strongly punctured elytra, of which the pubescence is very fine and scanty; it is, moreover, of a deeper black colour, without any trace of greenish reflections on the head and thorax; and the anterior tibiæ are not so strongly denticulated, the teeth being finer and blunter. Erichson himself seems at one time to have doubted the specific distinctness of this insect from *M. difficilis*.

39. **Meligethes ochropus**, (Schüpp.) Sturm, Ins. Deutsch. xvi, 23, 10, Tab. cccvi, fig. h. H. i.; Er., Ins. Deutsch. iii, 180, 13; T. J. Bold, Ent. Mo. Mag. vol. iii, p. 47.

Mr. Bold records the capture of this species in May, 1855, near Hartley; and I possess specimens taken in the London district, identical with Mr. Bold's insect, which has long been known to Mr. Waterhouse, but was not brought forward by him on account of certain discrepancies between it and the Erichsonian types.

40. **Meligethes Marrubii**, Brisout, in Grenier's Cat. Col. de France et Mat., &c. 54, 70; G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (Ent. 32, p. 121) records the capture of a single specimen of this insect at Weston; stating it to be about the size and form of *M. serripes*, but at once known by the very strong setæ of the intermediate tibiæ.

According to M. Brisout (who lays no particular stress on the *intermediate* tibiæ) its thorax is longer than in that species, and less sinuated at the base.

41. **Meligethes ebeninus**, Först., Uebers. des Käf. 15; G. R. Crotch, Cat. Brit. Col. ed. 2; id. Ent. 32, 121; Proc. Ent. Soc. 19 Nov. 1866.

Mr. Crotch (Entom.) states that this species belongs to the *lugubris* group, but is very distinct from its sparse punctuation and very black appearance. Having only seen two females, the identification is not made with certainty. In the Proc. Ent. Soc., Mr. Crotch records one female, and appears to have no doubt of the species.

42. MELIGETHES OBSCURUS, Erichs., Ins. Deutsch. iii, 203, 42; G. R. Crotch, Cat. Brit. Col. ed. 2; id. Ent. 32, 121; Proc. Ent. Soc. 19 Nov. 1866.

Two specimens in Mr. Wollaston's collection from the North of England. The insect seems to nearly resemble *M. erythropus*, but to be longer and larger than that species, and to have dark legs.

43. CERYLON SEMISTRIATUM, Perris, Ann. de la Soc. Ent. de France, 1865, p. 507, 4; D. Sharp, Proc. Ent. Soc. 19 Nov. 1866.

Mr. Sharp believes he is correct in referring to this insect a species of *Cerylon* which he had separated under the MS. name of *parcepunctatum*, though the latter does not agree in all points with M. Perris' description.

M. Perris states his insect to differ from *C. histeroides* in its longer, more convex, much more finely punctured thorax, which is more narrowed in front, and is enlarged regularly behind; also in its more convex and oval elytra, on which there are only five or six striæ, which are effaced in the lower third, and of which the interstices are more evidently punctulated.

44. SILVANUS BIDENTATUS, Fab., Syst. El. i, 317, 28 (*Dermestes*); Er., Ins. Deutschl. iii, 338, 3; M. Young, Ent. Mo. Mag. vol. ii, 181.

Mr. M. Young records the capture by himself, under fir bark near Paisley, of the above species, determined for him by Mr. D. Sharp.

It is half as large again as *S. unidentatus*, and more elongate and duller than that species; having, also, the anterior angles of the thorax much more distinctly and sharply spined, and a short—but decided—spine on each side of the head, behind the eyes. The thorax, moreover, is larger, and has two shallow longitudinal grooves; the joints of the antennæ are longer; and the tibiæ are not dilated externally and obliquely truncated, as in *S. unidentatus.*

45. **Cryptophagus fuscicornis**, Sturm, Deutschl. Ins. xvi, 95, 18; Er., Ins. Deutschl. iii, 358, 10; E. C. Rye, Ent. Mo. Mag. vol. iii, p. 102.

I have brought forward this species with some little doubt, on the authority of a specimen belonging to Mr. D. Sharp, and taken by him in the London district. This insect agrees with Erichson's description in the majority of its characters; being rather smaller than any *C. dentatus*, of a more cylindrical shape, with much more strongly and widely punctured elytra, and with the anterior angles of the thorax strongly prominent and terminating behind in a sharp tooth, and the lateral tooth situated at the middle of the sides, which are more narrowed behind it and less strongly crenulated. Erichson's description of the pubescence does not, however, exactly accord with that of Mr. Sharp's insect, which is very long. The specimen above mentioned somewhat closely resembles *C. quercinus*, Ktz., according to the exponents of that species in the British Museum Coll.; but differs from them in its smaller size, the more evident contraction of its thorax behind, and the stronger punctuation of its elytra.

C. fuscicornis was introduced as British by Mr. G. R. Crotch in his Catalogue; but that gentleman has recently withdrawn it (Entom., No. 32, p. 122), as his exponent (apparently named by a continental Entomologist) proves to be an extreme variety of *C. dentatus.*

The type in the Brit. Mus. Coll. appears also to be incorrectly named.

46. HYPOCOPRUS LATRIDIOIDES, Motsch., Bull. Mosc. (1833), 75; G. R. Crotch, Cat. Brit. Col. ed. 2; id. Proc. Ent. Soc. 19 Nov. 1866.

Found very rarely by Mr. Crotch under cow-dung in a sandy field at Brandon, Suffolk. It appears to have been hitherto recorded only from Greece, Southern Russia, and the Canaries.

This most puzzling little creature (which is stated to be allied to *Paramecosoma*) can scarcely be likened to any of our recorded insects. It might, perhaps, be superficially described as a black specimen of *Lissodema* 4-*guttata*, of the size of *Latridius ruficollis*.

47. ATOMARIA LONGICORNIS, Thoms., Skand. Col. v, 269, 2; G. R. Crotch, Cat. Brit. Col. ed. 2; id. Proc. Ent. Soc. 19 Nov. 1866.

A single specimen was taken near Beauly, Inverness-shire, by Mr. Crotch, during the last summer.

The species appears to be of the size of *A. fimetarii*, but with longer antennæ, and less ample thorax; it resembles *elongatula* in the structure of its antennæ, but differs from that insect in its more convex and rather more strongly punctured elytra.

48. EPISTEMUS GLOBULUS, Payk., Faun. Suec. 1, 295, 24; Er., Ins. Deutschl. iii, 402, 4; G. R. Crotch, Cat. Brit. Col. ed. 2, 6.

Mr. Crotch (Entom. No. 32, p. 122) states that the insect known to us by this name is not correctly designated; and that the true *globulus*, Payk., is much rarer, considerably smaller, and differently shaped; the thorax, moreover, being simply emarginate in front, instead of bisinuate.

49. HETEROCERUS ARENARIUS, Kies., Germ. Zeits. f. Ent. iv, 284; G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (Entomologist, No. 31, p. 111) notes that this species was long ago introduced as British by Mr. Haliday, in the "Natural History Review," but that this fact has apparently hitherto escaped notice. In a recent communication, however, from the former gentleman, he expresses very much doubt about the correctness of this introduction, as his Irish specimens of the so-called *arenarius* do not differ substantially from *femoralis*, Kies. (*flexuosus*, Wat. Cat).

50. PARNUS NITIDULUS, Heer, Faun. Col. Helv. i, 467, 16; Er., Ins. Deutschl. iii, 516, 8; D. Sharp, Proc. Ent. Soc. 19 Nov. 1866.

A single specimen of this insect was taken by Mr. Sharp at Aberlady, near Edinburgh, in July last.

According to Erichson it can easily be confused with a light coloured form of *P. auriculatus*, but it is to be distinguished from that species not only by its colour (it is clothed with golden-silky pile, and has red antennæ and legs), but by the lesser convexity of its thorax, and the want of any trace of striæ on the elytra.

+ 51. MACRONYCHUS 4-TUBERCULATUS (Frontisp., fig. 2), Müll., Ill. Mag. v, 215, 1; Er. Ins. Deutschl. iii, 536, 1; G. R. Crotch, Cat. Brit. Col.; E.W. Janson, Proc. Ent. Soc. 19 Nov. 1866.

A single specimen of this most interesting addition to our fauna (a genus, moreover, new to us, and conspicuous for its minute six-jointed antennæ) was taken by Mr. J. T. Harris, of Burton-on-Trent, in August, 1864, on the banks of the Trent at Egginton, while waiting the arrival of Mr. Gurneys and myself, intent on catching *Aphthona nigriceps*. Thinking his insect to be only *Elmis Volkmari*, Mr. Harris made no remark of his capture; and it was Mr. Crotch, accidentally visiting him, who discovered the existence of this prize. The insect is like an elongate *E. Volkmari*, with two tubercles near the base of the thorax, and two more, in the shape of elongate ridges, on the elytra, near the scutellum.

This rare insect is described as living in pools connected with rivers, on stones overgrown with *Confervæ*, and wood lying in the water; also on timber weirs, posts, and hurdle-work in rivers, on floating or submerged pieces of wood collected by the dammings of rivers, and (in May and June) on half-rotten willow boughs sunk in brooks.

52. ELMIS (LIMNIUS) TROGLODYTES, Gyll. (Dej. Cat. *Elonis*), Ins. Suec. iv, 395, 1—2; id. ii, xviii, 1—2 (*tuberculatus*), G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit.) states that this species is very closely allied to *L. tuberculatus*, but markedly smaller, with the thorax longer, and the elytra more visibly punctuate-striate. He has hitherto only seen it from the north. According to Erichson (Ins. Deutschl. iii, 524) the thorax is *shorter*, with the longitudinal striæ not waved, and the space between them more distinctly punctured; and the punctured rows of the elytra are *finer*.

53. HYDRÆNA PALUSTRIS, Er., Col. March. i, 200, 1; Kies., Linn. Ent. iv, 167; G. R. Crotch, Cat. Brit. Col. ed. 2; id. Proc. Ent. Soc. 19 Nov. 1866.
Hydræna 2 *nov. Sp.?* Wat. Cat.

Taken in the north of England by Dr. Power and Rev.

W. Hey. It appears to have been formerly represented in our lists by *H. nigrita*.

54. HYDRÆNA ANGUSTATA, Sturm, Ins. Deutschl. x, 77, 5; Kies., loc. cit. 175; G. R. Crotch, loc. cit.

Mr. Crotch records two examples mixed with *H. riparia* in his collection, and probably from Scotland.

† 55. HYDRÆNA PULCHELLA, Germ., Ins. Spec. i, 94; Kies., loc. cit. 187; G. R. Crotch, loc. cit.

Hydræna 6 *nov. sp.?* Wat. Cat.

Taken in Derbyshire and Yorkshire, in company with *H. atricapilla*.

56. APHODIUS NEMORALIS, Er., Ins. Deutschl. iii, 816, 16; D. Sharp, Proc. Ent. Soc. 19 Nov. 1866.

piceus, G. R. Crotch, Cat. Brit. Col. ed. 2; nec Gyll.

Taken by Messrs. Sharp and Crotch at Rannoch during the past spring.

It is distinguished from *A. fœtidus* by its slighter convexity, darker elytra, distinct frontal tubercles (in the male), less closely punctured thorax, and the more strongly punctured striæ of its elytra.

From *A. piceus*, Gyl. (not as yet correctly recorded as British, but likely to occur here), it may be known by the finer and more equal punctuation, and less blunt hinder angles of its thorax; also by the somewhat finer striæ of the elytra, and the armature of the head, inasmuch as in both sexes the transverse line on the clypeus is distinct, and the middle tubercle in the male is not stronger than those on its sides.

57. **APHODIUS NIGER**, Panz.; Er., Ins. Deutschl. iii, 833, 28; G. R. Crotch, Cat. Brit. Col. ed. 2; Ent. 32, 123; Proc. Ent. Soc. 19 Nov. 1866.

According to Mr. Crotch, this is abundant in the spring at Deal, and has hitherto been confounded with the immaculate form of *A. plagiatus*, Lin., but is of a deep black, with no æneous tendency, and has the metasternum sparingly punctured and glabrous in the male.

In addition to these characters on the under surface, according to Erichson, it has the same metallic black colour, the same lustre, shape and sculpture as *A. plagiatus*, but is always larger, with the head usually more thickly punctured, the side of it projecting very little outwards, and the larger punctures of the thorax proportionately smaller.

58. **APHODIUS CONSPUTUS**, Creutz; Er., Ins. Deutschl. iii, 877, 57; G. R. Crotch, Proc. Ent. Soc. 19 Nov. 1866.
pubescens, Crotch, Cat. Brit. Col. ed. 2; Ent. 32, 123; nec Sturm.

Mr. Crotch has three specimens, which he inclines to think are from the Lancashire coast.

According to Erichson, this species is very like small specimens of *A. prodromus*, but readily distinguishable by the lateral yellow spots on the head.

59. **THROSCUS ELATEROIDES**, Heer, Faun. Col. Helv. i, 443, 2; De Bonv.; Redt.; E. W. Janson, Proc. Ent. Soc. 7 May, 1866, Ent. Mo. Mag. vol. iii, p. 24.

Taken by Mr. J. A. Brewer in April last, at the roots of herbage near Rochester; also, at the same place, by Mr. E. Smith and Dr. J. A. Power.

It is smaller than *T. dermestoides*, from which it may be distinguished by the oblique central groove running completely across, instead of merely in front of, its eyes; and by the thickly punctured interstices of its elytra. From our other species, *T. obtusus*, it may be known by its larger size, the two fine parallel longitudinal ridges between its eyes, and its thicker punctuation.

According to Redtenbacher it is found on *Parietaria officinalis.*

60. ATHÖUS SUBFUSCUS, Müll.; Kies., Ins. Deutschl. iv, 327, 13; G. R. Crotch, Cat. Brit. Col. ed. 2; Proc. Ent. Soc. 19th Nov. 1866.

Mr. Crotch records some specimens received from the Shetland Isles a few years ago by Mr. Edwin Brown, of Burton-on-Trent.

This species resembles male varieties of *A. vittatus*, but has the fourth joint of the tarsi almost equal to the third, whilst in that insect it is much shorter and narrower.

61. LIMONIUS PARVULUS, Panz.; Kies., Ins. Deutschl. iv, 335, 6; G. R. Crotch, Proc. Ent. Soc. 19th Nov. 1866.

" One specimen taken by Mr. Sidebotham near Devizes."

It seems, from Kiesenwetter's description, to be larger than the largest *L. minutus*, slightly narrowed at the extremities, with a brassy tinge, and much more pubescent, the hairs being yellowish or golden-coloured, the antennæ slighter, the tarsi and tibiæ testaceous and the claws not dentate.

62. MICROCARA BOHEMANNI, Man. Bull. Mosc., xvii, 10, 6; Thoms., Skand. Col. vi, 131, 2; G. R. Crotch, Cat. Brit. Col. ed. 2; Ent. 32, 124.

Mr. Crotch states this insect to be smaller than *M. livida*, (of which he thinks it will eventually prove a mere state), with raised margins to the thorax, and less evident costæ on the elytra. It seems to be much rarer than the insect which Mr. Crotch considers its type. In his Catalogue it does not, however, rank as a "sub-species," but is put on an equal footing with *M. livida*.

63. CYPHON PALLIDIVENTRIS, Thoms., Skand. Col. vi, 135, 4; G. R. Crotch, Cat. Brit. Col. ed. 2; Ent. 32, 125.

Allied to *coarctatus*, according to Mr. Crotch, with close, thick punctuation round the scutellum; and lighter and less thickly punctured than its immediate ally, *C. fuscicornis*, Thoms., already included in our lists.

64. CYPHON NIGRICEPS, Kies., Ins. Deutschl. iv, 413, 5; G. R. Crotch, Cat. Brit. Col. ed. 2; Ent. 32, 125; Proc. Ent. Soc. 19 Nov. 1866.

Mr. Crotch states this insect to be somewhat rare, and certainly differing from Thomson's *C. nigriceps;* also that it resembles *C. pubescens* in the absence of raised costæ, but is of smaller size and more shining appearance, and has acute posterior angles to the thorax.

Kiesenwetter likens it superficially to varieties of *C. variabilis*, but says it reminds one of a *Scirtes*, from its broader round-ovate build.

65. CIS REGULOSUS, Mellié, Ann. de la Soc. Ent. de Fr. 1848, 242; G. R. Crotch, Cat. Brit. Col.; Ent. 32, p. 126.

Mr. Crotch states this species to be intermediate between *C. boleti* and *C. setiger*.

66. Cis punctulatus, Gyll., Ins. Suec. iv, 625, 3—4; Mellié, loc. cit. 345 (?); G. R. Crotch, Cat. and loc. cit. p. 127.

Mr. Crotch refers to this species, with doubt, two examples of a *Cis* not referable to any other, but differing materially from the descriptions given. He states them to be as elongate as *C. alni*, very distinctly punctured, and clothed with longish hairs.

67. Cis Jacquemartii, Mellié, Ann. Soc. Ent. Fr. (1848), 328; G. R. Crotch, Cat. Brit. Col. ed. 2 (*Eridaulus*); Ent. 32, 127; Proc. Ent. Soc. 19 Nov. 1866.

Mr. Crotch has only seen one example of this insect, from Scotland. He states it to be very nearly allied to *C. nitidus*, but to differ from that species in its dark, nearly black colour, and in the anterior angles of its thorax being obtuse, instead of produced.

68. Conopalpus brevicollis, Kr., Stett. Ent. Zeit. 1855, s. 374 (?); G. R. Crotch, Cat. Brit. Col. ed. 2.

+ 69. Anaspis rufilabris, Gyll., Ins. Suec. iv, 521, 11—12; Muls., Col. de Fr., Longip.; G. R. Crotch, Ent. 26, p. 33; Edleston, do. 28, p. 67.

Mr. Crotch records specimens from Cambridge, and in Mr. Edleston's collection (taken in Dunham Park); and describes the species as black, pubescent, with the mouth, base of antennæ (of which the last five joints are moniliform) and a portion at least of the tibiæ paler, and the appendices of the male linear, reaching the fifth segment, which is straight; whereas in *A. frontalis* the appendices are curved at the apex, and the fifth segment is foveolate, and in *A. forcipata* they reach beyond the fifth segment, which is bilobed. According to Thomson (Skand. Col. vi.) this insect is more evidently strigose, especially on the thorax, than *A. frontalis* and *A. forcipata*.

70. ANASPIS MONILICORNIS, Muls., Col. de Fr., Longipèdes, 1856, 88 (?); G. R. Crotch, Ent. 26, p. 32; Cat. Brit. Col. ed. 2.

Mr. Crotch, after expressing his opinion that this insect will undoubtedly occur here, and stating that it has the colouring of *A. rufilabris*, but with no ventral appendages in the male, and the first joint of the anterior tarsi equal to the second, whilst in *rufilabris* it is much shorter, includes it, with a query, in his "Catalogue."

According to Thomson it should be obsoletely strigose, with the thorax nearly smooth; but Mr. Crotch thinks further confirmation of this character is required.

71. ANTHICUS QUISQUILIUS, Thoms., Skand. Col. vi, 360, 2; G. R. Crotch, Cat. Brit. Col. ed. 2; Proc. Ent. Soc. 19 Nov. 1866 (*quisquiliarius*).

Mr. Crotch states this insect to be confused with *A. floralis* (*pedicularius*), and not rare in dung-heaps, &c.

It appears to be not quite so shining as *A. floralis*, without the two minute tubercles in the middle of the anterior margin of the thorax, and with its punctuation closer.

Thomson refers his insect to the var. b of Gyllenhal's *A. floralis*; but, as it seems to me, with scarcely sufficient reason.

It seems to occur indiscriminately with *A. floralis*; and, were it not that Thomson expressly refers to the male, one would be tempted, from the trifling nature of its characters, to consider it as one of the sexes of that insect.*

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* Laferté (Mon. Anth., 152) states that males of *A. floralis* rarely have the tubercles distinct, whilst they are almost always present in the female.

72. XYLOPHILUS NEGLECTUS, Du V., Gen. des Col. d'Eur. vol. iii, pl. 85; Aubé, Gren., Cat. Col. de Fr. et Mat. &c., 91, 110; G. R. Crotch, Cat. Brit. Col. ed. 2; Proc. Ent. Soc. 19 Nov. 1866.

Mr. Crotch records two specimens from the New Forest as distinct from our other species, and agreeing tolerably with the description above cited. Mr. Waterhouse has long had a species of *Xylophilus* (doubtless identical with Mr. Crotch's) separated in his collection from *X. populneus.*

73. SALPINGUS ÆRATUS, Muls., Col. de Fr., Rostrifères, p. 34; R. Hislop, Ent. Mo. Mag. vol. iii, p. 141 (*Lissodema*); G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Hislop records the capture by himself, at Girrick, Berwickshire, of an example of this species, named for him by Mr. Crotch, who had taken other specimens in Scotland. It appears also to have been found by Mr. Wollaston in Lincolnshire.

Mr. Crotch's insects seemed to be allied to *S. ater*, from which they are separated by their size, differently shaped thorax and more thickened antennæ.

74. RYNCHITES UNCINATUS, Thoms., Skand. Col. vii, 36, 8; G. R. Crotch, Cat. Brit. Col. ed. 2; Proc. Ent. Soc. 19 Nov. 1866.

Mr. Crotch (Ent. 33, p. 135) states that this species is larger than *R. nanus*, with a strigose rostrum, rugulosely punctate thorax, and hooked tibiæ; and that it is commoner in the south than that species. It appears to have been separated from *R. nanus* in Dr. Power's collection for some years.

Thomson separates it from *R. nanus* by the hook at the apex of the tibiæ, the forehead and rostrum being punctulated (the latter strigose-punctate at the apex), and the thorax "*magis concinne*" (instead of "*rude*") punctulated, and obsoletely channelled in the middle.

75. SITONES LONGICOLLIS, Schön., Syn. Ins. ii, 271; Allard; G. R. Crotch, Cat. Brit. Col. ed. 2; Proc. Ent. Soc. 19 Nov. 1866.

Mr. Crotch (loc. cit. p. 136) states that M. Allard, to whom he submitted his *Sitones*, pointed out two or three of this species.

It is allied to *S. flavescens*; and, as pointed out by me, Ent. Monthly Mag. vol. i, p. 230 (note), may be known from that species by its smaller size, more deeply furrowed head, rather more prominent eyes, more elongate and more distinctly punctured thorax, unspotted head and thorax and more strongly punctate-striate elytra.

76. SITONES CINERASCENS, Schön.; Allard; Ent. Ann. 1866, 100; D. Sharp, Ent. Mo. Mag. vol. iii, p. 164.

Mr. Sharp has taken in the island of Arran, in August, 1864, a specimen of a *Sitones* differing from *cambricus* in the colour of its antennæ, which are rufo-testaceous, with the club darker,—the broad sulcation of its rostrum,—its longer and narrower build, especially evident in the thorax, the less coarse punctuation of its upper surface, and the nearly white scales of its underside. Mr. Sharp has no doubt that this insect is the *S. cinerascens* of Allard, of which mention has been made in the "Annual" for the present year.

Another example has subsequently been detected in Mr. Crotch's collection.

77. SITONES LINËELLUS, Gyl., Ins. Suec. iii, 281, 15; D. Sharp, Proc. Ent. Soc. 19 Nov. 1866.
tibialis, Thoms.

Mr. Sharp refers to this species (which has been on former occasions recorded as British, on the authority of vars. of

S. tibialis), some Scotch examples taken by Mr. R. Hislop; and he has himself found a single specimen of it at Aberlady. Mr. T. J. Bold, moreover, appears to have taken a fine series of it at Newcastle.

These insects have somewhat the facies of *S. crinitus*, and appear to differ from *S. tibialis* in their more uniformly rufous legs, less prominent eyes, shorter clubbed antennæ, less strongly punctate-striate elytra, longer thorax, and less lineated but more maculated coloration. The hairs at the hinder part of the elytra are, also, somewhat longer.

Mr. Sharp points out that our common *S. tibialis* appears to be unknown to Thomson, who refers Gyllenhal's *linëellus* to that species, and Gyllenhal's *tibialis* to *sulcifrons;* also that Thomson appears to be uncertain about the correctness of his views as to these species, as he gives no reference to Schönherr's *tibialis*, though that author is quoted by him for all the other species.

78. **BARYNOTUS SCHÖNHERRI**, Zett., Ins. Lapp. 187, 7; Thomson; G. R. Crotch, Cat. Brit. Col. ed. 2; Proc. Ent. Soc. 19 Nov. 1866.

Mr. Crotch (loc. cit. p. 136) distinguishes this species from *B. obscurus;* giving as characters for it that it is much less densely scaled, the rostrum and thorax being nearly bare, its scales are metallic, and the whole insect smaller.

I find that the humeral angles of the elytra are, also, much more pronounced, and the thorax is less rounded at the sides, with the punctuation more evident.

The insect appears to come from the north of England.

79. **HYPERA JULINI**, Sahlb., Ins. Fenn. ii, 42, 32; Schön., Syn. Ins. vi, 381, 75; G. R. Crotch, Cat. Brit. Col. ed. 2.

alternans, Steph.

Mr. Crotch (loc. cit.) states that M. Capiomont finds this insect always separable by constant structural characters. When these are published, I shall be very glad to use them in discriminating between it and *H. Pollux*, which I invariably take in its company, and to which (as far as appearances go) I possess "leads," selected out of a single batch of captures.

80. HYPERA (PHYTONOMUS) ELONGATUS, *Payk.*, Faun. Suec. iii, 236, 53; (Boh.) Schön., Syn. Ins. vi, 369, 44; G. R. Crotch, Cat. Brit. Col. ed. 2; Proc. Ent. Soc. 19 Nov. 1866.

Mr. Crotch (loc. cit. p. 135) states that a *Hypera* forwarded to M. Capiomont, who is engaged on a revision of the European species, was returned with this name. It appears to be very close to *H. suspiciosus*, but with the tibiæ in the male much more strongly hooked, and the whole insect much more elongate.

Mr. Crotch has no note of the capture of his specimen; but says the insect occurs in Sweden, and is not unlikely to be found here.

Schönherr attributes it to this country; probably on account of an erroneous reference to Stephens.

81. OTIORHYNCHUS AMBIGUUS, Schön.; Stierl. 280; E. C. Rye, Ent. Mo. Mag. vol. ii, p. 182.

I have taken specimens of what I consider may be this insect (recorded as British by De Marseul, Cat. Col. d'Eur. 1863, and Stierlin), at Rannoch, in company with *O. rugifrons*, to which it is very closely allied, if, indeed, the two be not specifically identical.

It appears to be somewhat narrower than *O. rugifrons*, and clothed more thickly with hairs; the thorax is somewhat more finely granulated, and the elytra are more finely punctate-striate, with the granulations of the interstices not arranged in such distinct rows. The rostrum and vertex are more rugose-punctate, the punctures running into longitudinal rugulæ; the former, also, is distinctly keeled in the middle, with an obsolete longitudinal furrow on each side. The second joint of the funiculus should be almost shorter than the first, instead of somewhat longer, as in *O. rugifrons*.

De Marseul attributes this species to Stephens, but there is no reference to it in the "Manual."

82. MAGDALINUS BARBICORNIS, Latr., Hist. Nat. d. Crust. et d. Ins. xi, 103, 1 (*Rhina*); G. R. Crotch, Cat. Brit. Col. ed. 2; Proc. Ent. Soc. 19 Nov. 1866.

Mr. Crotch (loc. cit.) states that Dr. Power possesses specimens of this species, that he has seen examples in other collections, and that it is near *M. pruni*, but distinguished at once by the singular antennæ of the male.

The antennæ in both sexes of *M. barbicornis* have the funiculus as well as the scape rufo-testaceous; and, compared with *M. cerasi*, the male clava is narrower, considerably longer, and densely clothed with erect rigid hairs. The elytra, also, are glossy, deeply sulcate, with the sulci faintly punctured, and the interstices convex and finely coriaceous.

Stephens' *barbicornis* is the male of *M. cerasi*.

83. TYCHIUS POLYLINEATUS, Germ.; Schön., Curc. iii, 403, 3; G. R. Crotch, Cat. Brit. Col. ed. 2; Ent. 33, 134; Proc. Ent. Soc. 19 Nov. 1866.

Mr. Crotch states that this insect must be regarded as new to our fauna, on the authority of a single specimen taken by him about three years ago at Cambridge, and named by M. Brisout; the insect hitherto known to us by this name being, according to the latter, referable to another species.

84. **ANOPLUS ROBORIS**, Suffrian, Stett. Ent. Zeit. (1840), 59; G. R. Crotch, Proc. Ent. Soc. 19 Nov. 1866.

This appears to have been separated in the cabinets of Dr. Power and Mr. S. Stevens, and has also been received from Leicestershire by Mr. Wollaston. It was identified by M. Wencker, and is considerably larger than the largest specimens of *A. plantaris.*

85. **ORCHESTES SEMIRUFUS**, Gyll.; Bris.; E. C. Rye, Ent. Mo. Mag. vol. ii, p. 225.

M. Brisout refers this species to our country, though it is not recognised as indigenous by modern British Coleopterists; Mr. Walton having shown that the *O. semirufus* of Stephens' collection is a var. of *O. quercûs*, though the descriptions in the latter's works are doubtless correctly transcribed.

Mr. Walton has also shown that the *nigricollis* of Marsh. and Steph.,—referred by M. Brisout with doubt to this species as a var.,—is only *melanocephalus*, Oliv.

O. semirufus resembles *scutellaris*, but with the head, rostrum and thorax black (the latter being less rounded at the sides), and the femora obsoletely toothed.

86. **ORCHESTES PUBESCENS**, Stev.; Bris.; E. C. Rye, loc. cit. p. 226.

Also attributed to England by M. Brisout, who refers to Stephens under this name and the synonym of *pilosus;* but both the *pubescens* and *pilosus* of the latter author have been shown by Mr. Walton to be nothing but *O. ilicis*.

O. pubescens resembles *ilicis* in form, but is more allied to *fagi*, having stronger and coarser pubescence than that insect, with the scutellum and sides of the breast white, and the elytra more deeply punctate-striate, and not so dilated behind the middle.

87. **ORCHESTES POPULI**, Fab.; Bris.; E. C. Rye, loc. cit. p. 227.

Indirectly attributed to Britain by M. Brisout, who also refers to Stephens, whose species under this name has been shown by Mr. Walton to be *Tachyerges stigma.*

O. populi is oblong-ovate, rather narrow, black, sparingly and very delicately clothed with ashy pubescence, and with the posterior femora un-toothed, very slightly thickened, and banded with black.

88. **ORCHESTES DECORATUS**, Germ.; Bris.; E. C. Rye, loc. cit.

M. Brisout quotes Stephens' works for the type form, and also refers the *O. affinis* of that author to it as an immaculate condition. Mr. Walton has shown that both the *O. decoratus* and the *O. affinis* of Stephens are *O. rusci.*

89. **BAGÖUS SUBCARINATUS**, (Gyll.) Schon., Syn. Ins. iii, 543, 9; G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (Ent. 33, p. 135) states that we certainly have this species, which is near, but distinct from, *B. frit.* In the first edition of that gentleman's Catalogue this species was brought forward next to *B. limosus*, of which it was, however, intended by him to be a synonym; and he now informs me that his *subcarinatus* most probably represents our *B. limosus*, which M. de Barneville suppresses.

In the second edition of his Catalogue Mr. Crotch quotes *limosus* as a synonym to *B. laticollis;* and informs me that the original *limosus* (as well as *B. petrosus*), is to be referred to that species.

90. PACHYRINUS (PHYTOBIUS) DENTICOLLIS, (Gyll.) Schön., Syn. Ins. iv, 584, 9; J. A. Power, Ent. 29, p. 80.
4-*nodosus*, Wat. Cat., nec Gyll.

Dr. Power records the capture by himself at Lee of six examples of a *Pachyrinus* living only in marsh-ground, larger, more coarsely tuberculated, and with a shorter thorax than the insect usually found in dry and chalky places, and which represents the *P.* 4-*nodosus* of our Catalogues. These marsh specimens have been returned from M. Brisout de Barneville as the true *P.* 4-*nodosus* of Gyll.; and the insect formerly known to us by that name is considered to be *P. denticollis* by M. Brisout.

91. CEUTHORHYNCHUS SUTURALIS, Fab., Gyll., Schön., Syn. Ins. iv, 478, 4; J. A. Power, Ent. 24, 13.

A single specimen has been taken by Mr. J. Sidebotham, in the spring of 1865, crawling on the sand, "on the Welsh Coast." On the continent it appears to be rare, living on sallow. It is about the size of a large *C. sulcicollis*, has undentate femora, and may be at once known by the broad line of white scales which extends from its neck to the apex of its elytra.

92. CEUTHORYHNCHUS SUTURELLUS, (Gyll.) Schön., Syn. Ins. iv, 558, 119; Rev. W. Tylden, Ent. Mo. Mag. vol. ii, p. 256.

Mr. Tylden records the capture near Hythe in May, 1865, of specimens of a *Ceuthorhynchus*, allied to *C. cyanipennis*, from a species of *Cardamines*, which he brings forward with doubt as the *suturellus* of Gyll. These insects appear to be specifically identical with others belonging to Mr. Crotch, which were pronounced by M. Brisout (who had compared them with one of Schönherr's types) to belong to that species. It seems, also, that the *C. cyanipennis* of the Rev. H. Clark's collection was represented by this species.

According to Gyllenhal, *C. suturellus* should be less than *cyanipennis*, with its thorax black, clothed sparingly with whitish scales, and rufescent beneath on the apical margin; the striæ of its elytra obsoletely punctured, and the interstices flat, the suture densely clothed with whitish scales in front, its legs clothed with whitish scales, and *all* its femora armed beneath with an obtuse tooth. Mr. Tylden's insect is, on the contrary, equal in size to (one in my possession being rather larger than) *C. cyanipennis*, with the thorax entirely greenish, exhibiting no trace of scales, and with no red margin beneath, the striæ of the elytra strongly punctate, with the interstices somewhat elevated, the base of the suture only slightly—and the legs not at all—squamose, and the anterior femora not toothed. Mr. Crotch considers these discrepancies set at rest by M. Brisout's verdict on his specimens.

Compared with *C. cyanipennis*, Mr. Tylden's insect has the rostrum longer and nearly glabrous (in the female), the head not so depressed between the eyes, the thorax destitute of setæ and with its anterior margin not reflexed, the elytra more convex, with rounder interstices and no setæ; it is also brighter in colour.

+ 93. CIONUS HORTULANUS, Marsh., Ent. Brit. 278, 119, *Curculio* (A. c.*); Crotch, Cat. Brit. Col. ed. 2; Proc. Ent. Soc. 19 Nov. 1866.

Mr. Crotch (Ent. 33, p. 134) states that this species (sunk by Walton, but retained in the European Catalogues) is much commoner than *C. thapsus*, and has the rostrum in the female smooth and attenuate.

C. thapsus, according to that gentleman, is greener, and has the black sutural spots very unequal in size. According to Redtenbacher its suture and alternate interstices are somewhat more elevated, and checkered for their entire length with bordered, pale yellow and brownish-black haired spots.

94. XYLOTERUS QUERCUS, Eichhoff, Berlin. Ent. Zeit. 1864, 381; D. Sharp, Proc. Ent. Soc. 19 Nov. 1866.

To this recently described species (and which, on account of its well defined markings, is the most worthy to bear that specific name) must be referred the insects standing in our collections as *X. lineatus*, and chiefly coming from the store boxes of the Rev. A. Matthews, who has found it in Sherwood Forest. The true *lineatus* has only been taken by Mr. Sharp and myself in felled pines at Rannoch.

X. quercus (amongst other characters) is larger than *X. lineatus*, with the club of the antennæ larger and more widened towards the front; the rugosities of the thorax are coarser, and the pubescence thicker and longer; the punctures of the striæ of the elytra deeper, but not so sharp-edged, and the lineation blacker and more defined.

95. TOMICUS QUADRIDENS, Hartig; Ratz., Forstin. Käf. 193; D. Sharp, Proc. Ent. Soc. 19 Nov. 1866.

Found at Rannoch. Mr. Sharp thinks it will prove a distinct species from *T. bidens*, of which Ratzeburg considered it a remarkable variety.

96. TOMICUS LICHTENSTEINII, Ratz., Redt. 790 (De Mars.); G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch informs me that he now considers this species to have been erroneously brought forward by him, and that his insect is undescribed. I believe, from what Mr. Crotch tells me, that it is a very small insect, extremely like the male of *T. bispinus*, and which I have taken in company with that species at Darenth.

97. CRYPTOCEPHALUS VIOLACEUS, Lin., Fab.; Gyll.; Suffrian, Linn. Ent. ii, 121, 39; G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit.) states that there is an old specimen, without locality, in Dr. Power's collection; and that the species is not unlikely a native of this country.

98. CRYPTOCEPHALUS VITTATUS, Fab.; Redt.; Suffr., loc. cit. iii, p. 51, 87; G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit. p. 137) states that specimens are extant in several old collections; but he believes that all, like *Onthophagus Taurus*, originally came from Jersey.

99. CRYPTOCEPHALUS QUERCETI, Suffr., Linn. Ent. iii, 96, 196; Rye, Cat. "British Beetles;" G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit.) records two specimens of this insect, taken by the Rev. A. Matthews, one (he believes) in Sherwood Forest. It appears to be like *C. frontalis*, but with only the under side of the head and the antennæ and legs yellow.

I suspect this insect to be represented by the *C. geminus* of Wat. Cat.; an opinion apparently shared by Mr. Crotch.

100. HALTICA (GRAPTODERA) ERICETI, Allard, Mon. Alt. 82, 35; G. R. Crotch, Cat. Brit. Col. ed. 2; id. Proc. Ent. Soc. 19 Nov. 1866.

Named by M. Allard from specimens in Mr. Wollaston's collection, taken in the West of England. It appears to be abundant near York on heather (Crotch).

101. HALTICA (GRAPTODERA) LONGICOLLIS, Allard, loc. cit. 83, 36; G. R. Crotch, Cat. and loc. cit.

Mr. Crotch records three examples from Scotland, one of which was, I believe, named by Mr. Allard. I have the insect both from Scotland and Scarborough, and it has long been known to Mr. Waterhouse, having been sent by him to M. Kutschera, who has not yet returned it. It is of an elongate and somewhat parallel form, sometimes dull blue-black in colour, and may be known, as Mr. Crotch remarks, by its singularly dilated anterior tarsi—a character entirely omitted by M. Allard and other authors, and the possession of which ought at once to have been remarked, as any tangible differenees are so rare in this genus.

102. HALTICA (GRAPTODERA) HELIANTHEMI, Allard, loc. cit. 85, 38; G. R. Crotch, Cat. and loc. cit.

"Three or four specimens named by M. Allard."

It appears to be wider and more convex than *H. oleracea*, with the elytra less strongly punctured.

103. PHYLLOTRETA FLEXUOSA, Ent. Heft. 71, 42; Kuts., Wien. Mon. (1860), 205; G. R. Crotch, Cat. and loc. cit.; nec Allard (= *undulata*, Kutz.).

"One specimen from Mr. Wollaston's collection, named by M. Allard."

It appears to be one of the more convex section, with the bands recurved towards the suture only at the apex, and interrupted in the middle by a wide notch on the outer side.

104. APHTHONA ATRATULA, Allard, loc. cit. 405, 128; G. R. Crotch, Cat. Brit. Col. ed. 2.

This insect appears to be allied to *A. herbigrada*, but black, with a transverse thorax, which is also more finely punctured.

105. Plectroscelis Sahlbergii, Gyll.; Allard, Alt. 570 (1860); G. R. Crotch, Cat. and loc. cit.

It appears that the insect known as *P. Sahlbergii* is distinct from that species, and has been described by M. Kutschera (Wien. Monats. vol. viii, 1864), under the name of *P. subcærulea.* The true *P. Sahlbergii* has been taken near Cambridge by Dr. Power, and is stated to be known by its much shorter antennæ.

+ 106. Thyamis absinthii, Kuts., Wien. Monats. (1862), 217; G. R. Crotch, Cat. and loc. cit.

Mr. Crotch states this species to be very common on *Artemisia maritima* at Weston-super-Mare and at Gravesend. It appears to be closely allied to *T. anchusæ.*

+ 107. Thyamis castanea, Foudras; All. loc. cit. 1861, 321; G. R. Crotch, Cat. Brit. Col. ed. 2.

Appears to be distinguished from *T. brunnea* by its less strong and less regular punctuation, and by the long curved white hairs at the apical edge of its elytra.

108. Thyamis patruelis, Allard, G. R. Crotch, Cat. Brit. Col. ed. 2.

+ 109. Thyamis atriceps, Kuts., Wien. Monats. (1863), 217; G. R. Crotch, Cat. and loc. cit.

"Three or four specimens in Mr. Wollaston's collection, from the West of England."

110. Thyamis medicaginis, Allard, Alt. 124, 72; G. R. Crotch, Cat. and loc. cit.

"Five or six specimens in Mr. Wollaston's collection."

111. THYAMIS FUSCULUS, Kutschera, Wiener Ent. Monatschrift, vol. viii (1864), p. 273 (*Longitarsus*); C. O. Waterhouse, Ent. Mo. Mag. vol. ii, p. 229.

Described as new to science by Herr Kutschera, from British specimens sent to him for inspection by Mr. G. R. Waterhouse. It appears to differ from *T. brunneus* and *T. minusculus* in being less convex and more thickly punctured on the elytra; but it is impossible to give further characters or locality with certainty, as Herr Kutschera has as yet been too much occupied to vouchsafe an acknowledgment even of the receipt of Mr. Waterhouse's insects (though sent to him about two years ago, with a complete list of English synonyms, &c.), or to return the types.

112. THYAMIS WATERHOUSEI, Kutschera, loc. cit.; C. O. Waterhouse, Ent. Mo. Mag. vol. ii, p. 229.

Also described from Mr. Waterhouse's specimens, and compared with *T. ballotæ* and *T. lycopi*, from the former of which it appears to be distinguished by its more glossy surface and reddish colouring, and from the latter by its larger size, greater convexity and breadth, and by its coarser, and, on the elytra, very indistinctly striate punctuation.

113. THYAMIS GRACILIS, Kutschera, loc. cit.; C. O. Waterhouse, Ent. Mo. Mag. vol. ii, p. 229.

Also described from specimens sent by Mr. Waterhouse. This insect is not uncommon on *Senecio Jacobæa* at Mickleham and elsewhere in Surrey. It is very like a small *T. ochroleuca*, but without the dark colouring of the apical half of the hinder tibiæ; its thorax, moreover, is broader than in that species.

114. PSYLLIODES NIGRICOLLIS, Marsh. Ent. Brit. 205, 91; G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch adopts the view taken by recent continental authors as to the specific distinction between this insect and *P. chrysocephala*, Linn., of which it certainly appears to be nothing but a mere colour-variety.

115. PSYLLIODES LURIDIPENNIS, Kutschera, Wien. Ent. Monat. vol. viii (1864), 393; C. O. Waterhouse, Ent. Mo. Mag. vol. ii, p. 229.

This insect, the "*Psylliodes* 6 sp. —?" of Waterhouse's Catalogue, was discovered by Mr. T. V. Wollaston in Lundy Island.

It has a brassy-green head and thorax, shining reddish-brown elytra, brassy-green legs, with the hind femora pale at the base, and testaceous antennæ. Its colour, smaller size, and more finely and closely punctate-striate elytra distinguish it from its ally, *P. chrysocephala.*

116. CLAMBUS PUNCTULUM, Gyll., Ins. Suec. iv, 515, 21 (*Agathidium*); Du V.; G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (Ent. 32, p. 120) states that this species differs from its ally, *C. minutus*, in being about half the size, and gradually attenuate behind.

117. TRICHOPTERYX CHEVRIERII, Allibert, Rev. Zool. 1844, 52; Rev. A. Matthews, Ent. Mo. Mag. vol. ii, p. 242.

Mr. Matthews has detected two examples of this species among his old reserves, probably from Oxfordshire.

It appears to belong to the same section as *T. dispar*, having the thorax short, and the posterior angles scarcely produced: and, according to Mr. Matthews, may be known by its short and wide form, the sculpture of its thorax, its castaneous colour and long legs.

De Marseul quotes this species as a var. of *T. atomaria*, De G.

118. BŒOCRARA LITTORALIS, Thomson, Skand. Col. vol. i, p. 99; D. Sharp, Ent. Mo. Mag. vol. ii, p. 230; Rev. A. Matthews, loc. cit. p. 242 (*Trichopteryx*).

Mr. Sharp notes the capture of this insect by himself at Rannoch; and Mr. Matthews subsequently records its detection by Mrs. Matthews, near Gumley, in moss, in 1862, since which year he has himself met with another example, and four more specimens have been taken by Mr. Wollaston in Devonshire. Thomson's *Bœocrara* appears to be chiefly founded on the lateral margination of the thorax in this species; but Mr. Matthews thinks it is separated from *Trichopteryx* without sufficient reason; and De Marseul makes it a mere sub-division of that genus, whilst the late Dr. Schaum sunk it altogether. In the event of its suppression, Mr. Sharp proposes to give the name *Thomsoni* to the insect, as there is already another species named *littoralis* in the genus *Trichopteryx* (Mots., Bull. Mosc. vol. xviii, 1845, p. 517), but which appears to be a *Ptenidium*, and (according to Mr. Matthews, who does not think the proposed change necessary) only capable of being cited as a synonym of *P. punctatum*, Gyll. Mr. Crotch, however, follows Mr. Sharp's opinion.

T. littoralis has the punctuation of its upper surface coarse and distant; presenting, indeed, the only instance of true punctuation in the genus *Trichopteryx*,—all the other species known (upwards of fifty) having the surface either smooth, or more or less tuberculate. The posterior angles of the thorax, moreover, are not acute and produced behind, but rectangular.

119. Ptilium saxonicum, Gillm. 81, 4, t. 7, fig. 4; G. R. Crotch, Cat. Brit. Col. ed. 2.

Although this insect has been included in our lists, it would appear that in Mr. Crotch's Catalogue is its first authentic record. The Rev. A. Matthews writes to me that its capture by Mr. Crotch was a great event, the species being almost lost, as no specimens existed in all the collections he had seen, these amounting to nearly all in Europe, except the Berlin. Mr. Matthews' own *saxonicum* were yellow-legged vars. of *Kunzei.*

120. Ptilium elongatum, Thomson, Skand. Col. iv, 108, 6; Rev. A. Matthews, Ent. Mo. Mag. vol. ii, p. 243.

Not having received any types from Thomson, Mr. Matthews enters this insect provisionally in our lists; and states that it is found abundantly under dry cow-dung in most parts of the country during the autumn, also that it differs from *P. Kunzei* in its finer sculpture and darker colour, and in the prolonged apex of its elytra.

121. Latridius angulatus, Mann., Germ. Zeits. v, 74; G. R. Crotch, Cat. Brit. Col. ed. 2; Ent. 32, p. 122; Proc. Ent. Soc. 19 Nov. 1866.

One specimen only, named by the originator of the species, was in Mr. Wollaston's collection. From the "Entomologist," Mr. Crotch appears to have more than one example; and states the species to be close to *L. angusticollis*, but to differ materially in the anterior angles of the thorax.

122. **Latridius consimilis**, Mann., l. c. 99; G. R. Crotch, Cat. Brit. Col. ed. 2; Ent. 32, 123; Proc. Ent. Soc. 19 Nov. 1866.

Two specimens in Rev. A. Matthews' collection. It appears to be distinct by its quadrate thorax, the angles of which are not at all dilated, and the broad, smooth interstices of its elytra.

123. **Latridius filum**, Aubé, Ann. de la Soc. Ent. de France, 2me série, 1850, 334, 44; E. C. Rye, Ent. Mo. Mag. vol. iii, p. 46.

Mr. W. R. M'Nab, of the Royal Botanic Gardens, Edinburgh, records the capture by himself among dry specimens of certain species of aconite (not British, but for some time in cultivation) of several examples of a *Latridius*, which Mr. D. Sharp recognized as new to Britain; and which, on their being sent to me, I had no difficulty in referring to Aube's species as above. It much resembles *L. filiformis*, Gyll., but differs from that insect in being even more linear in shape, with its thorax more cordate, less widely margined, and with a small but distinct and rounded impression on the disc. It seems to have been first detected by M. Guérin-Méneville, who bred it from a fungus received from Algiers.

This appears (as I am informed) to be the Canadian species mentioned by Mr. Janson in the "Annual" for 1858, p. 74.

CHANGES IN NOMENCLATURE, &C.

CICINDELA CAMPESTRIS, Linn., v. NIGRITA, Dej.

Mr. Crotch ("The Entomologist," No. 31, p. 106) states that this variety was erroneously inserted in the 1st edition of his "Catalogue." The insect should have been recorded as *C. funebris*, St., a nearly black form of *campestris*, once taken in Sutherlandshire.

CICINDELA MARITIMA, Dej.

Mr. Crotch (loc. cit.) unites our *hybrida* and *maritima* under this name, stating that they only vary in size and the form of the central band, characters locally well marked on our coasts, but shown by series of continental specimens not to be constant. The *C. sylvicola* of Stephens, taken at Epping, seems, according to Mr. Crotch, to be the typical *C. hybrida*, which is common abroad inland, and rarely found on the sand-hills.

In the 1st ed. of his "Catalogue" Mr. Crotch quoted the insect as *hybrida*, Linn., giving *maritima*, Dej., as a var. of that species. In the 2nd ed. it stands *maritima*, Dej., with var. *hybrida*, St.; and from this it is not quite clear whether Mr. Crotch means to unite *hybrida*, Linn., with *maritima* Dej., or merely to suppress one of our forms of the latter. If, however, Stephens' *sylvicola* be the true *hybrida*, Linn., it would appear that we have the types of both species, supposing them to be species.

DRYPTA EMARGINATA, Oliv. (nec Fab.).

Mr. Crotch (loc. cit.) proposes to revert to the old name, with the above substitution of authors; as Dr. Schaum, who restored Rossi's name *dentata*, did not notice that Fabricius had not originated but adopted Olivier's name, and the latter's work is coeval with Rossi's (1790), to which it is infinitely superior.

DRONIUS MONOSTIGMA, Leach, Samouelles' "Compendium" (1819).

Mr. Crotch (loc. cit.) states that this insect was recognisably described as above, at least five years before Germar brought forward his *unipunctatus.*

CYMINDIS (TARUS) BASALIS, Gyll., Ins. Suec. i, 175 (*Carabus*).

Mr. Crotch (loc. cit.) states that the *vaporariorum* of Linnæus cannot apply to this insect; as that author describes it in the "Fauna Suecica" as one of the smallest in the genus, and found in hot-beds in his garden.

NOTIOPHILUS AQUATICUS, Linn.

Mr. Crotch (loc. cit.) states that *N. laticollis,* Chaud., and *N. Germinyi,* Fauvel, furnish accurately the link between this species and *N. palustris;* and that he has seen intermediate specimens in this country.

In Mr. Crotch's "Catalogue," ed. 2, the latter insect is ranked as a "sub-species," but numbered as a species; it seems to me, however, that if the above-mentioned insects *really* form a connection between it and *aquaticus,* it would be better to quote it as a var. of that species, than to import an unrecognised grade into our lists.

A similar course is pursued with *N. biguttatus* and *N. 4-punctatus* (which, as Mr. Crotch says, is often *bigutt*— on one, and *4-punct*—on the other side); insects which under no circumstances could hold the same relative positions as *aquaticus* and *palustris,* I cannot see how *N. Germinyi,* already sunk as a mere var. of *palustris,* can be intermediate between that insect and *N. aquaticus,* as its thorax is described as much more contracted behind than in *palustris.*

NOTIOPHILUS SUBSTRIATUS, Waterh.

Mr. Crotch (Cat. Brit. Col. ed. 2) now deposes *punctulatus,* Wesm., in favour of Mr. Waterhouse's species; and (loc. cit. p. 106) states that *N. geminatus*, Dej., to which he formerly attributed it, is found in S. Europe, and has unicolorous elytra, and more numerous frontal striæ.

CALATHUS MOLLIS, Marsh.

Mr. Crotch (loc. cit.) now considers this insect a mere form of *melanocephalus*, Linn.; and states that with the intervening links, such as *C. ochropterus*, Dej., it is almost impossible to distinguish them.

He also says they may be found in company; but I have never found this to be the case.

CALATHUS ROTUNDICOLLIS, Dej.

Mr. Crotch (loc. cit.) deposes *C. piceus* (a name adopted by Marsham from Linnæus, whose species appears to belong to *Anchomenus*) in favour of Dejean's insect.

TAPHRIA (SYNUCHUS) VIVALIS, Ill.

Mr. Crotch (loc. cit.) states that as Illiger was the real describer of this species, though Panzer figured it before him, the verdict of the former must be taken; and that Illiger says Panzer by mistake called it *nivalis*, a name which would clash with the prior *Carabus nivalis* of Paykull.

ANCHOMENUS JUNCEUS, Scop.

Mr. Crotch (loc. cit.) is inclined, in the absence of uniformity, to follow Dawson in restoring this name to the insect generally known as *angusticollis*, Fab.; Scopoli's description being scarcely applicable to any other insect, and certainly not to *Nebria Gyllenhali*, as suggested by the late Dr. Schaum.

ANCHOMENUS ATRATUS, Dufts.

Mr. Crotch now sinks this insect as British in favour of *pusillus*, Schaum; stating (loc. cit. p. 108) that the true *atratus* (which he terms the "type-form") does not occur here, but is found in Austria, and that it differs in the elytra and form of the thorax.

ANCHOMENUS THOREYI, Dej.

Mr. Crotch (loc. cit.) in acknowledging the identity of Dawson's *pelidnus* with this insect, records the capture by Mr. Sharp, in Scotland, of some specimens differing slightly, but apparently constantly, from the English form, and thinks these may be the true *puellus*, Dej.

These specimens (for some of which I am indebted to Mr. Sharp) differ from our *Thoreyi* in being darker, shorter and broader.

PTEROSTICHUS ORINOMUS, Steph.

Mr. Crotch (loc. cit.) considers this insect cannot well be considered more than a form of *P. vitreus*, Dej., from which he states it to differ by its shorter thorax, and which occurs over the whole north of Europe.

Herr L. Von Heyden, in the Stettin. Ent. Zeit. 1866, 251, in his notes upon Staudinger and Wocke's *Coleoptera* from Finmark, appears to think the two insects are specifically distinct; as Dejean states his species to be apterous, whereas the Finmark specimens, agreeing with Stephens' description, have wings, a character also recognised by Dawson for *orinomus*.

AMARA EURYNOTA, Panz.; Dej.

Mr. Crotch (loc. cit.) notices that this name was published, accompanied by a figure, a year previous to the *A. acuminata* of Paykull.

AMARA OBSOLETA, Dej.

Mr. Crotch (loc. cit.) considers that a name is still wanted for this insect; as, although the late Dr. Schaum showed that Dejean had misinterpreted Duftschmidt's species, and adopted the Fabrician *ovata*, the latter name was in prior use by Paykull for another insect.

HARPALUS MONTICOLA, Dej. Spec. iv, 195, 3.

Mr. Crotch (loc. cit.) retains this name for Stephens' *H. stictus;* as the prior *obscurus* of Fab. was long before applied to an *Anchomenus* by Herbst.

HARPALUS DIFFINIS, Dej.

Mr. Crotch (loc. cit.) remarks that I (Cat. "British Beetles") have *united* this with *H. rotundicollis,* Fairm., but that we certainly have the two species.

This is not exactly accurate: I *queried* the *rotundicollis* of Wat. Cat. as representing the *H. diffinis* of Dejean; partly because it seemed not unlikely that we did not possess the true *rotundicollis,* which seems a southern insect, and partly because I was not certain about the specific claims of the two forms. The sole difference between them seems to consist in an infinitesimally less degree of sinuation in the apex of the elytra and the less (not *more,*—as stated by Mr. Crotch) rounded sides of the thorax in *H. diffinis,* which Mr. Crotch leaves as a distinct species, while deposing *H. cribellum* as a "sub-species" of *H. puncticollis.*

HARPALUS CONSENTANEUS, Dej.

Mr. Crotch (loc. cit. p. 109), admitting the priority of Stephens' *attenuatus,* proposes to retain Dejean's name, as the former author's description is included among a mass of imaginary species, and the insect was also again described by him under another name.

BRADYCELLUS RUFULUS, Dej.

Mr. Crotch (loc. cit.) proposes to follow Dejean, who first clearly separated this insect and its allies, in preference to using Duftschmidt's *verbasci*, as brought forward by Dr. Schaum, since Duftschmidt *probably* mixed more than one species. Marsham's *fulvus* is not to stand, his description being (certainly) valueless, and the name pre-occupied. Mr. Crotch is inclined to link *B. collaris* with *B. harpalinus*; and, probably, with this insect also.

BEMBIDIUM RIPARIUM, Payk., 1790; Oliv.; Schaum, Ins. Deutschl. i, 737, 63, B; G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit.) gives this insect as a "sub-species" of *B. biguttatum*, Fab.: it appears to be the largest form of that insect, 2¼ lin. long, and has the seventh stria of the elytra indistinct. *Biguttatum* is retained for the smaller form, like *B. guttula*, with distinct seventh stria. These separations have long been made by Duval and Schaum. *B. æneum*, Germ., Mr. Crotch unites with those as a mere coast form; and, following the "sub-species" scheme, connects *B. Mannerheimii* with *B. guttula*, *B. assimile* with *B. Clarkii*, *B. pusillum* with *B. normannum*, *B. lampros* with *B. velox*, Er. (which he states to be rare in this country, and distinguished by the presence of the seventh stria on the elytra), *B. tibiale* with *B. atro-cæruleum* and *B. adustum* with *B. varium*, Ol. (*ustulatum*, Dej.). As, however, all these insects are numbered as species in Mr. Crotch's Catalogue, it becomes rather difficult to know what exact value he proposes to give to them.

AGABUS DISPAR, Bold., Zool. 1849, supp. xxiv; Tyneside Nat. Hist. Club Trans. i, 277.

Mr. Crotch (loc. cit. p. 111) proposes to retain Mr. Bold's name for the insect known to us as *A. uliginosus*, Payk.; inasmuch as the Linnæan *Ilybius uliginosus* is much too near in position, and Paykull quotes Linnæus for his insect.

HYDROPORUS VICTOR, Aubé; &c.

Mr. Crotch (loc. cit.) proposes to sink *ferrugineus*, Steph., the much older and well recognised name, on account of *Hyphydrus ferrugineus*, Linn.; but also considers that *H. oblongus*, Steph., being prior by a few years to the *H. nitidus* of Sturm, should be restored, and that *H. piceus*, Steph., must be adopted instead of *Gyllenhalii*, Schiodte. The types of *H. tinctus*, Clark, in Dr. Power's collection, do not appear to Mr. Crotch to differ specifically from *H. palustris*.

OXYPODA ERICHSONI, G. R. Crotch, Cat. Brit. Col. ed. 2.
umbrata, Er., nec Grav.

Dr. Kraatz, in the Berlin. Ent. Zeit. 1865, 414, has already proposed the name of "*humidula*" for this insect.

HOMALOTA ATRICILLA, Er.; Scriba, Berl. Ent. Zeit. 10, p. 289 (1866); E. C. Rye, Ent. Mo. Mag. vol. iii, p. 121.
maritima, Waterhouse.
flavipes, Thoms., nec Grav.

Herr Scriba points out the identity of Thomson's *H. flavipes* with *H. atricilla*, Er.,—the latter appearing to have been described from an immature specimen.

Mr. G. R. Crotch, in the 2nd edition of his "Catologue" deposes the *H. maritima* of Waterhouse in favour of *H. algæ*—presumably the species of that name brought forward by Messrs. Hardy and Bold, It is, however, to a supposed variety of that species (which apparently confused both *puncticeps* and *maritima*) that Mr. Waterhouse's insect must be referred; but the proved identity of the latter with the prior described *H. atricilla* settles the question.

HOMALOTA PICEA, Mots. Bull. Mosc. 1858 (vol. 31, pt. 2), p. 254, 222; E. C. Rye, Ent. Mo. Mag. vol. iiii p. 123.

I have (loc. cit.) transcribed Motschulky's description of this species, taken, according to that author, in England, and attributed also by De Marseul to this country alone; and I trust my fellow Coleopterists have been able to make more out of it than I. No size is given for the insect, and the sole comparative character afforded is that it is like *H. oblita*, Aubé (I presume intended to mean *Erichson*), but narrower and darker. The abdomen is mentioned as being constricted (étranglé) at the base, with only the margins of the first segments punctured.

HOMALOTA NIGRITULA, Er.
liturata, Wat. Cat.

This insect is erroneously placed in Mr. Crotch's Cat. ed. 2; it should be next to *H. dilaticornis*, Ktz.

BRYOPORUS HARDII, G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch proposes this name for the *castaneus* of Hdy. and Bold; the latter name being pre-occupied.

STENUS OPACUS, Er., Wat. Cat.; E. C. Rye, Ent. Mo. Mag. vol. ii, p. 258.

Herr. Kaspar Dietrich of Zürich, in answer to a communication of mine with reference to his supposed species *debilis,* informs me that the *S. opacus* of Erichson is (as I supposed) certainly identical with the insect to which he had given the former name in MS. It appears not to have been published, as Herr Dietrich detected the incorrect reference of *S. opacus* as a synonym to *S. carbonarius,* alluded to by me in the last "Annual."

Mr. Crotch, in his Catalogue, follows Kraatz in suppressing Erichson's species under *niger,* Mann.

STENUS ELEVATUS, Mots., Bull. Mosc. 1857, 511, 44; E. C. Rye, Ent. Mo. Mag. vol. iii. p. 124.

It seems to me that this insect is synonymous with our *S. ossium;* to which *S. impressipennis,* Duv., *S. carinifrons,* Fairm., and *S. sardous,* Ktz., have already been referred.

S. Fauvelii, Bris. (Gren., Cat. Col. Fr., 128, 156), taken in company with *S. subæneus* (*gonymelas*), and distinguished from it, amongst other characters, by its less strong punctuation, seems not unlikely to be referred also to the same species.

HOMALIUM PINETI, Thoms.; D. Sharp, Ent. Mo. Mag. vol. ii, p. 255.

Mr. Sharp objects to De Marseul's use for this insect of the name *lapponicum,* Zett., the earliest in date, and under which I noticed it in the last Entomologist's "Annual," as Mannerheim had, prior to Zetterstedt, described another *Homalium* under that name.

CHOLEVA LONGULA, Kelln.

Mr. Crotch (Entom. No. 32, p. 119) refers with certainty the insect recorded by me as above to the *pilicornis* of Thomson; doubting whether it be the real *C. longula* of Kellner, or whether Murray was right in supposing that species to be merely elongate *C. tristis.* I consider that the insect I brought forward as *C. longula* cannot be associated with Thomson's *pilicornis* for the following reasons. Thomson does not notice the conspicuous length of the elytra, using in that respect almost convertible terms for the two species, and stating his insect to be *simillimus* to *tristis* in build and size. The antennæ in *pilicornis* are *crassæ*, with apical joint ferruginous,—the extreme tip of that joint only being of that colour in my insect, and the whole antennæ much longer than in *tristis*. The thorax, also, should be longer in *pilicornis*; and this I cannot see in my insect.

ANISOTOMA ORNATA, Fairm.; &c.

Mr. Crotch (loc. cit.) states that I have "restored" Stephens' *litura*, and that that name cannot stand, the colouring only having been described by Stephens, and being common to *A. dubia* and *A. calcarata* at times. This is scarcely accurate; I did not *restore* Stephens' name, as it had never fallen into disuse with us; and the colouring of *litura* is *not* common to the other two species, which only have the suture or thorax dark, at the utmost; whilst a full coloured *litura* could not be possibly confounded with any other species, from Stephens' character alone. At the same time I agree with Mr. Crotch in wishing to adopt the name and excellent diagnosis of Fairmaire.

Mr. Crotch points out that the *A. scita* of his Cat. ed. 1, was founded on this species.

The *Cyrtusa pauxilla* and *Agaricophagus* (*script. Agathidium*) *conformis* of his Cat., Mr. Crotch thinks are probably good species, though not entirely according with Erichson's descriptions; and the *Liodes axillaris* of his first ed., as anticipated in Ent. Mo. Mag., are admitted to be introduced on small *humeralis*.

PAROMALUS PUMILIO, Er.
14-*striatus*, Steph.

Mr. Crotch (loc. cit.) deposes Stephens' name, as not only coming into collision with 14-*striatus*, Gyll., but posterior to Erichson's by five years.

CERCUS PEDICULARIUS, Linn.

Mr. Crotch (loc. cit.), observes that almost the only difference between this species and *C. bipustulatus*,—which he ranks as its "sub-species" in his Cat., ed. 2,—is the length of the elytra, and that even this does not hold. Surely the difference in the basal joints of the antennæ in the males cannot have escaped him;—to say nothing of the less strong and somewhat thicker punctuation in *bipustulatus*, in which both sexes (instead of only the male, as in *pedicularius*) have the mandibles widened.

I never heard of the two insects being even taken in company.

NITIDULA OBSCURA, Fab.

Mr. Crotch (loc. cit.), states that he follows the greater proportion of authors in referring the *Silpha rufipes* of Linnæus to *Meligethes rufipes*, although the insects in his collection accord with the present species:—the description suiting neither. In that case, it seems to me that, if the name be retained at all, it is the *Meligethes* that requires the new name.

CERYLON ANGUSTATUM, Er.

Mr. Crotch (loc. cit.) deposes Stephens' *C. ferrugineum*, as Erichson was unable to identify it.

MONOTOMA ANGUSTICOLLIS, Gyll.

Mr. Crotch (loc. cit.) follows Thomson, who, as he states, shows that Aubé mistook Gyllenhal's species, when describing *M. conicicollis*, which is identical with it.

MONOTOMA FORMICETORUM, Dejean.

Mr. Crotch (loc. cit.) also adopts Thomson's revival of the older name for the *angusticollis* of Aubé.

LÆMOPHLŒUS BIMACULATUS, Payk.

Mr. Crotch, in the 2nd edition of his "Catalogue," brackets this species as doubtfully British. It has escaped his observation that Messrs. Scott and Douglas once took a quantity of it under hornbeam bark, in Hainault Forest.

CRYPTOPHAGUS SUBDEPRESSUS, Gyll.

Mr. Crotch (loc. cit.) now withdraws this species from his "Catalogue." It appeared to be represented in his 1st edition by *C. affinis*, Sturm (Colls. Bold and Janson). His *C. grandis* he states to be a very good and distinct species.

PARAMECOSOMA ABIETIS, Payk.

Mr. Crotch (loc. cit.) also, as anticipated, withdraws this species; which was, of course, represented by *C. vini*, Panz.

ATOMARIA NANA, Er.; Crotch, loc. cit.
nigriventris, Steph.

EPISTEMUS GYRINOIDES, Marsh., Ent. Brit. 77, 52 (*Dermestes*); Wollast.
ovulum, Er.
globulus, Wat. Cat., nec Payk.

Mr. Crotch (loc. cit.) points out these corrections.

BYRRHUS PUSTULATUS, Forster.
dorsalis, Fab.

Mr. Crotch exhibits his patriotism in elevating the name proposed for this species by our countryman.

HELOPHORUS MULSANTI, Rye, Cat. "British Beetles."
Crotch, Cat. Brit. Col. ed. 2.
dorsalis, Muls., nec Marsham.

The imposition of this name to the insect taken by Messrs. Crotch and Archer near Liverpool appears necessary.

HELOPHORUS GRANULARIS, Linn.

Under this name Mr. Crotch (loc. cit.) connects the insects known to us as *granularis*, *griseus*, and *obscurus*, Muls. (*æneipennis*, Thoms.), admitting his inability to define them, without the addition of three or four more species, to which latter alternative he inclines.

HYDRÆNA FLAVIPES, Steph.

Mr. Crotch (loc. cit.) states that this species was described by Mr. Waterhouse as *atricapillus*, but was referred to a new genus of which the characters were incorrectly exposed; hence his name cannot be retained. This is not exactly true. The characters (chiefly the comparatively small palpi) were correctly exposed, but were afterwards not considered sufficient to establish a new genus. There appears to me to be no reason whatever for proposing to drop Mr. Waterhouse's name for the species.

HYDRÆNA SIEBOLDI, Rosenh.

Mr. Crotch (loc. cit.) proposes to sink Mr. Waterhouse's *H. pygmæa*, which he admits is entitled to priority, in favour of this name, because *pygmæus* is already in use in *Ochthebius!*

LIMNEBIUS ATOMOS, Dufts., Faun. Austr. 245, 11 (*Hydrophilus*).

Mr. Crotch (loc. cit.) deposes the *picinus* of Wat. Cat., as there is nothing salient in Marsham's description of that insect, and the specimen of it in Stephens' collection (a Marshamian type, according to that author) corresponds with *L. nitidus*, Marsh.

BEROSUS SIGNATICOLLIS, Charpentier, Horæ Ent. p. 204 (*Hydrophilus*).

Mr. Crotch (loc. cit.) notes that this name has four years' priority over Curtis' *æriceps*, and is also accompanied by a figure.

HYDROBIUS ATRICAPILLUS, Stephens.

Mr. Crotch (loc. cit. p. 112) employs this name for the *H. bicolor* of our collections, as Paykull did not first describe the latter, but adopted it from Fabricius, who had only *Philhydrus testaceus* in view, according to Mr. Crotch.

HYDROBIUS GLOBULUS, Payk.

Mr. Crotch retains this name for the earlier Fabrician *limbatus*, which he states (loc. cit.) to have been irrecognisably described as a *Sphæridium* ; and to it, as "sub-species," he adds "*bipustulatus*" and "*ochraceus*."

CERCYON MARINUM, Thoms.

Mr. Crotch (loc. cit.) adopts Thomson's name for that one of the two species into which that author divided the *aquaticum* of Mulsant, and which is found here; the name *aquaticum* not standing for either on account of the pre-existence of Stephens' species of that name, which, however, is only a synonym of *anale*.

CERCYON PLAGIATUM, Er.

Mr. Crotch (loc. cit.) deposes the *terminatum* of Marsham, stating that that author's description would be more properly applied to a bright-coloured *hæmorrhoidale*.

CERCYON CENTROMACULATUM, Stephens.

Mr. Crotch (loc. cit.) also sinks *nigriceps* of Marsham; stating that his description agrees with a pale var. of *pygmæum*, there being no allusion to the central shade.

MEGASTERNUM BOLETOPHAGUM, Er.

Mr. Crotch (loc. cit.), after stating that Marsham's description and name certainly apply well to this species, and, whatever his *type* may be, his diagnosis was never drawn up from *C. minutum*, says *hence* he sees no reason to substitute the less expressive name of *C. obscurum* (which *is* Marsham's name). Surely Mr. Crotch intends to read here "*boletophagum*"; but he retains that name in his Catalogue.

MELANOTUS PUNCTOLINEATUS, Pelerin, Zool. Journal.
niger, Fab.

Mr. Crotch (loc. cit.) proposes to adopt Mr. Pelerin's name, if *niger* be retained for the *Athöus.*

CRYPTOHYPNUS QUADRIGUTTATUS, Lap.

Mr. Crotch (Ent. 32, p. 124) states this to be commoner here than *C. dermestoides*, which has immaculate elytra and dark base to the antennæ. He appears doubtful whether the two are specifically distinct; I can only say that I have taken insects showing these colour differences indiscriminately together, and with connecting gradations.

CARDIOPHORUS THORACICUS, Fab.

Although the author of this species described it from a British example, Mr. Crotch (loc. cit.) seems doubtful of its real claim to be indigenous; the apparent reason being a mistake in Mr. Wollaston's collection.

It is rightly named in the cabinet of Mr. Waterhouse, who obtained it, I believe, from the collection of the late Mr. Griesbach.

TELEPHORUS LITURATUS, Fallen.

Mr. Crotch (loc. cit.) retains this more expressive name, as he considers the description of *rufus* by Linnæus to be not capable of identification, and states that the exponents in his collection are *Hylecætus*.

TELEPHORUS FIGURATUS, Mann.; Ent. Ann. 1865, p. 71, 52.

Mr. Crotch, in erroneously referring to this species the insect afterwards described by Mr. Sharp as *T. scoticus*, remarks that the specimens he originally referred to *T. figuratus* are somewhat of a puzzle, and that he is unable to find anything at present with which they agree.

I have a specimen, taken by my friend Mr. Garneys, which seems to agree well enough with Kiesenwetter's description of *T. figuratus*.

TELEPHORUS TRANSLUCIDUS, Laporte.

Mr. Crotch (loc. cit.) states that the name *unicolor*, Curt., though the oldest for this species, is preoccupied by Faldermann.

TELEPHORUS FULVUS, Scopoli,

Mr. Crotch (loc. cit.) considers there can be no doubt Linnæus meant the *Ischnomera* by his description of *melanura;* and states that, though both the insects represent the species in his collection, the *Telephorus* has a very suspicious appearance, while the others seem typical enough.

TELEPHORUS LIMBATUS, Thoms.

Mr. Crotch (loc. cit.) states that the Linnæan exponents of *T. testaceus* agree with this species.

CIS HISPIDUS, Payk.

Mr. Crotch (Ent. 32, p. 126) follows Thomson in uniting this species with *C. micans*, Hbst.; stating that the only difference is the more serial disposition of the punctures in the former.

ANASPIS PULICARIA, Costa, 1853.
forcipata, Muls., 1856.

Mr. Crotch (Ent. 26, p. 32) is of opinion that, as Mulsant quotes Costa's description, and appears to have been in possession of his type, the latter author's name must be restored. In Mr. Crotch's "Catalogue," however, he retains Mulsant's name.

ANASPIS FASCIATA, Forst., 1771.
Geoffroyi, Müll., 1824; Muls.

Mr. Crotch (loc. cit.) states that this insect was first described by Geoffroy, and next by Forster, whose name must be retained; and that the Fabrician *fasciata* was subsequent in date to it, and belongs to a true *Mordella*.

ANASPIS MELANOPA, Forst., 1771.
maculata, Fourc., 1787; Muls.

Mr. Crotch (loc. cit.) states that Forster's name must be retained for this species.

APION ONONIDIS, Gyll.

Mr. Sharp (Ent. Mo. Mag. vol. ii, pp. 205, 230) in demurring to my adoption in the last "Annual" of Thomson's change in the nomenclature of this insect, has been at considerable pains, with a view to settling the question of its correct name; which, however, can scarcely be considered as satisfactorily determined. Independently of my own reason for following Thomson—viz., a wish to avoid the clashing of two such names as *ononis* and *ononidis* in the same genus—I presumed that that acute author had sufficient grounds (which, indeed, he was not bound to publish) for subverting the older appellation. Admitting, however (a view with which Mr. Sharp does not concur), that it would be desirable to avoid this confusion, it would appear that Boheman's description of *A. Bohemanni*, which name Thomson adopts, is not sufficiently recognisable, and that Boheman himself must have been anything but clear about its relations with Gyllenhal's species. Any difficulty on this point Thomson apparently proposes to meet simply by his identification of Boheman's type; but the corroboration of faulty descriptions by examination of specimens is not universally allowed. Boheman's name being thus open to objection, and Gyllenhal's liable to deposition (independently of its coming within the *idem sonans* canon) on account of its omission of the male character (*teste* the *Homalota umbonata-vicina* instance), there remains another alternative in the *A. ononicola* of Bach, which is given as a synonym to *ononidis*, and which Mr. Crotch informs me was named expressly to avoid the confusion as to *ononis* and *ononidis*.

STROPHOSOMUS MELANOGRAMMUS, Forster; G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit. p. 136) restores Forster's name for the insect subsequently described as *coryli* by Fabricius; and expresses his opinion that all that author's names ought to be restored carefully, both for English and American species.

PROCAS STEVENI, Schön., Curc. iii, 287, 5; G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit.) has no doubt that *P. picipes* and *P. granulicollis* are extreme forms of the same species; and states that Mr. Wollaston's remarks in the "Coleoptera Atlantidum" to this effect accord perfectly with the views of several continental Entomologists.

Schönherr's name, though later in date, is adopted for Marsham's *picipes*, which was unfortunately preoccupied.

OTIORHYNCHUS FUSCIPES, Oliv., Walton, Wat. Cat. E. C. Rye, Ent. Mo. Mag. vol. ii, pp. 181, 233; F. Smith, loc. cit. p. 232.

I have recorded as above the reasons for my opinion that this species has not yet been properly recorded as British; an opinion not shared by Mr. Smith, who was intimately acquainted with the late Mr. Walton, and who considers Schönherr's confirmation of that gentleman's *fuscipes* as decisive. It is only necessary to state here that Germar differed in this matter from Schönherr, and that continental Entomologists of the present day (including Stierlin, the monographer of the genus *Otiorhynchus*) appear decided in referring *O. fuscipes*, Oliv., to a different species from that so named by Mr. Walton; all the specimens of the latter that have come under my observation being, indeed, nothing but *O. tenebricosus*.

The insect recognized as *O. fuscipes* is narrower and more elongate than the latter, with the legs more often bright red, a shorter and broader thorax, and the elytra either more deeply striated or with more rugose interstices, and having no scanty patches of pubescence. In the male, which is still narrower than the female, the last segment of the abdomen is delicately, closely and evenly longitudinally striated beneath; the corresponding part in the male of *O. tenebricosus* having the longitudinal striæ stronger and less even, being not so closely packed in the middle as at the sides.

Mr. Crotch (Ent. No. 33, p. 136) considers we certainly have two very distinct species, for which (without, as he says, entering into the question whether we have Stierlin's *fuscipes* or not) he gives Stierlin's sexual characters between *fuscipes* and *tenebricosus*. I have seen none such.

LARINUS EBENEUS, Marsham, Ent. Brit. 270, 100, *Curculio* (A. b. * * * *); G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit. p. 135) restores Marsham's name as identical with and prior to the *carlinæ* of Olivier.

TYCHIUS LINEATULUS, Brisout; Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit. p. 134) states that the *T. polylineatus* of Waterhouse must be referred to this name, which, however, he infers cannot be retained.

TYCHIUS CURTUS, Brisout; Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit.) states that the true *T. junceus* does not occur in this country; and that Walton's insect of that name corresponds with the above species.

TYCHIUS SQUAMULATUS, Schön., Curc. iii, 404, 5; G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit.) remarks that the ochreous-scaled *T. Kirbii* of Waterhouse, generally known as *T. flavicollis*, is certainly this species.

TYCHIUS TIBIALIS, Schön., G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit.) states that comparisons with type specimens show that *T. nigrirostris*, Waterh., corresponds with this species, as had already been suspected.

ACALYPTUS RUFIPENNIS, Schön., Curc. iii, 448, 3; G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit.) states that the *A. carpini* of our catalogues must be referred to this species, the true insect of that name being larger and always clothed with silvery scales.

ORCHESTES RUFUS, Oliv.; H. Bris. de Barn.; E. C. Rye, Ent. Mo. Mag. vol. ii, pp. 224, 259.

Mr. Brisout, in his monograph of *Orchestes* (Ann. de la Soc. Ent. de Fr., 4me série, v. 5, p. 253 et seq.), states that this insect appears to be wanting in this country. It is, however, included in the lists of Walton and Waterhouse; and Mr. F. Smith has pointed out that there are three specimens of it in the British collection of the Brit. Mus., mounted, &c., in exactly the same manner as hosts of other undoubted indigenous species.

It is always entirely blood-red, less bulky, narrower, and more convex than *O. quercûs*, and with the elytra strongly punctate-striate.

BARIS ABROTANI, Germ., Ins. Spec. 202, 324; G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (Ent. 33, 133) proposes to ignore the name (*picicornis*, Marsh.) used for this insect by Walton.

His reason is that *B. abrotani* and *B. lepidii* were confounded; that from their relative distribution, probably the latter was the type; and that certainly Stephens had *B. lepidii* in view.

ACALLES TURBATUS, Schön., Curc. viii, 423, 30; G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit. p. 134) states that the *A. misellus* of Schön. is only a small and ill marked var. of the above species, the name of which should be retained.

BAGÖUS COLLIGNENSIS, Herbst, Col. vii, 50, 608, T. 98, f. 7; G. R. Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit. p. 135) restores Herbst's name to the insect known to us as *B. lutulentus;* partly as being anterior, and partly to avoid confusion.

CEUTHORHYNCHUS PALLIPES, Crotch, Cat. Brit. Col. ed. 2.

Mr. Crotch (loc. cit. p. 133), under the name (*contractus* v. ?) *pallipes* intends to designate the curious insect hitherto found only on Lundy Island by Mr. Wollaston, and which he states to differ from *contractus* solely in the colour of its legs, which are perfectly pale, though the insect appeared to be quite mature. Mr. Waterhouse's specimens are, also, much brighter altogether, and of a green tone.

CEUTHORHYNCH[IDE]US VERSICOLOR, Brisout.

Mr. Crotch (loc. cit.) remarks that the true *quercicola* of Fab. has a seven-jointed funiculus, being a true *Ceuthorhynchus;* hence the reference of the *quercicola* of our lists to *C. versicolor* is in all probability correct, for it certainly (as remarked by Thomson) has only six joints to its funiculus (vide Ent. Ann. 1866, p. 105, 74).

HYLASTES RUFUS, Marsham, Ent. Brit. 57, 19 (*Ips*); G. R. Crotch, Cat. Brit. Col. ed. 2.
palliatus, Er.

Mr. Crotch (loc. cit.) restores Marsham's name, as earlier in date and recognizably described; more so, in fact,—as he states,—than *H. obscurus*, which is generally received in preference to *H. trifolii*, Müll.

It seems somewhat strange that the Kirbyan *Steni*, &c., are to be deposed, if Marsham's description (which, amongst other difficulties, gives to the insect the same size as *piniperda*) be considered sufficient to authenticate this species.

+ Cryphalus asperatus, Gyll., Ins. Suec. 368, 13 (*Bostrichus*).
abietis, Ratz., Wat. and Crotch Cat.

Mr. Crotch (loc. cit.) states that the identity of these two species has been recently shown, and that Gyllenhal's name must stand.

+ Zeugophora Turneri, Power.

Mr. Crotch (loc. cit. p. 136) cannot see that this insect differs structurally from *Z. scutellaris*, Suffr., of which he considers it a very curious and constant variety; and says that the type form, with the head red or black (*Z. frontalis*, Suffr.), has not yet been detected in this country.

Lema Erichsoni, Suffr.

Mr. Crotch (loc. cit.) states that all the examples he has seen of this species, except some in Mr. Wollaston's collection, belong to *L. melanopa*, of which they appear to be a concolorous and hitherto unrecorded form. The true *L. Erichsoni* seems more closely to resemble *L. cyanella*, but to be more elongate and differently punctured.

+ Cryptocephalus fulcratus, Germ., Ins. Spec. Nov. 557, 758; G. R. Crotch, Cat. Brit. Col. ed. 2.
flavilabris, Wat. Cat., nec Payk.

Mr. Crotch (loc. cit. p. 137) records the above correction, to which his attention was drawn by Dr. Baly.

THYAMIS NIGRA, Ent. H., 57, 33; Allard, Alt. 95; G. R. Crotch, Proc. Ent. Soc. 19 Nov. 1866.

Mr. Crotch records two old specimens in Mr. Wollaston's collection. This species was already included in the first edition of Mr. Crotch's "Catalogue."

TRICHOPTERYX CHEVROLATII, Allibert, Rev. Zool. 1844; Rev. A. Matthews, Ent. Mo. Mag. vol. ii, p. 241.
pygmæa, Erichson, 1845.
parallelogramma, Gillm. 1845.

Mr. Matthews proposes to restore M. Allibert's names to certain species of *Trichopterygidæ*; not only on account of their indisputable priority, but because they are intelligibly described by that author, and agree with the types in his collection, which has been entrusted to Mr. Matthews by its present owner, M. Guérin-Méneville.

TRICHOPTERYX MONTANDONII, Allibert, loc. cit.; Rev. A. Matthews, Ent. Mo. Mag. vol. ii, p. 241 (*Montandouii*).
similis, Gillm.

PTILIUM RUGULOSUM, Allibert, Rev. Zool. 1844; Rev. A. Matthews, Ent. Mo. Mag. vol. ii, p. 241.
fuscum, Erichson.

PTILIUM SPENCEI, Allibert, loc. cit.; Rev. A. Matthews, Ent. Mo. Mag. vol. ii, p. 241.
angustatum, Erichson.
oblongum, Gillm.

PTILIUM EXARATUM, Allibert, loc. cit.; Rev. A. Matthews, Ent. Mo. Mag. vol. ii, p. 242.
canaliculatum, Erichson.

(N.B. Both in the Entomologist's Monthly Magazine and in Mr. Crotch's Catalogue of British Coleoptera, 2nd edition, this is erroneously printed *excavatum.*)

PTILIUM MYRMECOPHILUM, Allibert, loc. cit.; Rev. A. Matthews, Ent. Mo. Mag. vol. ii, p. 242.
inquilinum, Erichson.

PTILIUM FOVEOLATUM, Allibert, loc. cit.; Rev. A. Matthews, Ent. Mo. Mag. vol. ii, p. 242.
excavatum, Erichson.

Mr. Matthews, for the reasons above stated, considers these changes in nomenclature should be made.

PTILIUM TRISULCATUM, Aubé.

Mr. Crotch (Ent. 32, p. 120) deposes Weber's *minutissimum*, as that name had been previously used by Linnæus, and followed by Marsham, for an *Acrotrichis* (the prior generic name adopted by Motschulsky and Wollaston for the well known *Trichopteryx*).

CORTICARIA FERRUGINEA, Marsh, nec Gyll.
elongata, Gyll.

Mr. Crotch (loc. cit.) states that Marsham's name clearly applies to the commoner of our two species; hence the necessity for this and the following change.

CORTICARIA RUFULA, Zett.
ferruginea, Gyll., nec Marsh.

E. C. RYE.

284, KING'S ROAD, CHELSEA, S.W.
22*nd* *Nov.* 1866.

LEPIDOPTERA.

NOTES ON NEW AND RARE BRITISH LEPIDOPTERA (EXCEPTING TINEINA) IN 1866.

BY H. G. KNAGGS, M.D., F.L.S.

NOTWITHSTANDING the almost incessantly adverse atmospheric conditions of the past season, considerable gratification is derivable from the fact that several very interesting additions to our moth-fauna have been put upon record: and not only this, but as we review these discoveries, it strikes us that the entomological capabilities of these British Isles are by no means exhausted, and certain wholesome, but hitherto too generally disregarded, suggestions are convincingly forced upon us. For example, in the first place, the occurrence of *Dianthœcia cæsia* and *Pempelia subornatella,* accompanied by several unexpected rarities, in the Isle of Man, teaches us the advisability of extending our somewhat limited field of observation by mapping out and working new hunting-grounds, especially such as are insulated, and may therefore be suspected of possessing some characteristic peculiarity in their fauna.

In the second place, by the occurrence of *Aplasta ononaria,* (not only a species, but a genus new to Britain,) in the Folkestone Warren, at a time of year when collectors are wont to desert that much favoured watering-place, we should be encouraged to prosecute our investigations, even in well known localities, at other seasons than such as are noted for the production of the "delicacies" which induce the majority of us, as regularly as the time comes round, to visit the same old haunts punctually at certain dates, and, after working away for a stated interval, to return home with our store-houses lined with a repetition of the captures of previous years, instead of striving after the attainment of new facts, one of which ascertained is worth more than the mere acquisition of a hundred specimens of rarity.

Thirdly, as has often before been suggested, a more wide-spread interest in the works of our continental fellow-labourers could not fail to be productive of valuable results by which our store of knowledge would be enriched, and novelties and novel facts would be of more frequent recurrence. We might, perhaps, had we been fortified with a goodly stock of book-lore, have predicted the occurrence of, and even have been upon the track of, such species as the aforesaid *Aplasta*, the splendid *Xylina Zinckenii*, and the not uncomely *Tortrix ochreana*, all of which have, until the present year, escaped the notice of British collectors.

And lastly, by attention to the more neglected groups of our favourite order, very much remains to be accomplished both at home and abroad; many at present undetected species require but to be sifted out as it were and brought to light. Such are the thrice-taught lessons the wisdom of which a restrospect of the discoveries of 1866 corroborate and impress upon us, and which, say what one may, have been pretty generally neglected, especially of late years, by a large majority of British Lepidopterists, who are content to rush after and accumulate stores of some "good thing" or other which they or anybody else ma have had the luck to stumble on.

Our list of novelties does not by any means present s meagre an appearance as might from the unfavourable cli matic influences of the past season have been expected: it consists of the following:—

Dianthœcia cæsia, S. V.
Xylina Zinckenii, Treitschke.
Aplasta ononaria, Fuessly.
Scoparia basistrigalis, Knaggs.
Pempelia subornatella, Duponchel.
Tortrix ochreana, Hübner.
Dicrorampha flavidorsana, Knaggs, MS.

But let it not be imagined that these are necessarily the only discoveries in the Lepidopterous department. The Messrs. Fenn have captured a *Dianthœcia*, which may or may not be new to us; and among some *Scopariæ* kindly forwarded by Mr. Dale, I find one bearing his MS. name of "*ulmella*," which it is my purpose to characterise under that name, as a good n. sp., in a paper in course of preparation for "The Entomologist's Monthly Magazine;" and even while I write Mr. Birchall has forwarded for my inspection a pair of fore-wings apparently belonging to some small *Acronycta*, or *Polia*, found recently in his celebrated cave at Ilkley, which appear to have no connexion with any known British species. Then again, the second re-discovery of *Sericoris euphorbiana*, and the recurrence of such local species as *Sesia philanthiformis Lithosia caniola*, *Dianthœcia capsophila*, *Phlogophora empyrea*, *Glæa erythrocephala*, *Agrotera nemoralis*, *Diasemia Ramburialis*, *Crambus ocellea*, *C.* (?) *microgrammana*, *Eup. curvistrigana*, &c., in fresh habitats, are all peculiarly interesting in their way. Besides these, too, several singular varieties have turned up, among which may be mentioned two (♂ and ♀) extraordinary silvery lead-coloured aberrations of *Cabera pusaria*; a series of five or six examples of

M. montanata? wanting the central fascia and otherwise presenting a very abnormal *faciès*, analogous to that of the *albocrenata* var. of *C. ruptaria*, and coming from a similar northern locality; two more negro *H. dominula; Arctia caja* wanting the brown of the fore, and the blue-black markings of the hind wings; as well as variations in *P. rapæ* and *napi*, *A. Galathea*, *A. Silene*, *V. urticæ* (vel var. vel *Ichnusa*, Bon.?), *H. Tithonus* and *Janira*, *R. cratægata*, *M. fluctuata* (var. *costovata*?), *A. exanthemaria*, *Sc. ambigualis*, &c.; and, as if to oppose a contrast to the gigantic 3-inch *V. cardui* which have been exhibited, a 1-inch "Tiger" has been produced.

Nor must it be forgotten that the pencil and the pen have been actively engaged in portraying the larvæ of our British Lepidoptera.

In the following notes, as on previous occasions, the references to the new British species will be preceded by a few sketches of such subjects of interest as have arisen during the past year.

PRIOR APPEARANCE OF MALES AND FEMALES.

If it be true, as experience would incline us to believe, that during the emergence of any batch of a given species the individuals of either sex should temporarily preponderate, the above question, which has been broached in the pages of a contemporary, is not devoid of interest in so far as it may bear importantly on the natural laws which regulate the healthy perpetuation of species, as well as, in a measure, upon that absorbing subject—the variation of species: for if the males, say for example, should at any time predominate, it would seem to follow, as a matter of necessity, that the unpaired excess would spontaneously seek other, less nearly related and more distinctly located partners—and of the fact that the male insects will instinctively traverse long distances, in search of the wind-borne track of an unimpregnated "calling" female, any one who has witnessed the congregating of the males of *Endromis*, *Saturnia*, *Bombyx*, *Orgyia*, and others in equal or less degree, can have no shade of doubt—so that thus "breeding in," as it is called, may to a great extent be obviated, and a vigorous breed kept up, though not to the exclusion of occasional variation within certain limits, but certainly without any general tendency to stable variation such as may be observed in isolated colonies of species which do not enjoy the invigorating privilege of wide-spread alliances. These latter might, and probably would, in course of time degenerate (?) into whatever races within their scope of variation were best adapted to the exigencies of their surroundings.

NONAGRIA EXTREMA, Hübner, *versus* TAPINOSTOLA BONDII, mihi.

On the first of January, 1866, my good friend Mr. Doubleday acquainted me with the fact that Dr. Staudinger had written to him expressing his conviction that *T. Bondii* was the true *extrema* of Hübner. I had much rather that any one else than I had taken up the pen in defence of the insect which at present bears the respected name of my friend Frederick Bond; for, interesting as it would undoubtedly be should *Bondii* eventually prove to be the lost *extrema* of Hübner, I confess that, for my friend's sake, it would cause me much pain to see the name of *Bondii* sunk into oblivion; and I therefore, though reluctantly, place the following evidence before the readers of the "Annual."

On the 9th of February, Mr. Doubleday wrote to me as follows—"*I do not think I ever sent Dr. Herrich-*
"*Schäffer* Bondii, *but I sent two or three specimens of*
"concolor *to him, and I think he said that he had never*

"*before seen this species, and happened to know nothing about* "extrema. *Hübner's figure is very coarse and badly co-* "*loured, but it cannot possibly have been taken from a spe-* "*cimen of either* concolor *or* fulva, *and it is certainly more* "*like* Bondii *than any other species with which I am ac-* "*quainted. I placed a female by the side of Hübner's* "*figure just now, and with the exception of the black cilia* "*(which I believe do not exist in any other light-coloured* "*species of the genus) I consider it a fair figure of this spe-* "*cies—quite equal to Hübner's figures of the other* Nona- "griæ *and* Leucaniæ; *still I do not think it would be* "*advisable to drop the name of* Bondii *without some corro-* "*borating evidence of its being* extrema. *If Herrich-* "*Schäffer really saw Hübner's specimen he ought to be* "*able to speak positively about it, but he has figured two if* "*not three distinct species under this name: in fact* extrema "*seems to be a myth, for no one on the continent can produce* "*a specimen.*"

Next let us take the evidence of Dr. Herrich-Schäffer, who distinctly states that Herr Mann sent him the original of Hübner's fig. 412, and that the anterior wings are broader than in *N. fulva*, the inner margin longer, *the hind margin more vertical*, &c., &c.; and this description is accompanied by a figure bearing exceeding resemblance to the *concolor* of M. Guenée. Now, if there was one character more than another that, in my diagnosis, I endeavoured to lay stress upon, it was that, with respect to the anterior wings of N. (?) Bondii, *the hind margin was less vertical* than in *N. concolor*, or indeed any other species of the group, and it was this character which especially led me to give it with considerable doubt as belonging at all to the genus *Nonagria.*

M. Guenée in his Herculean work on the *Noctuélites* remarks that the only example of *extrema* he has seen (in Dr. Boisduval's collection) appears to him to be nothing more than a pale variety of *fulva*, but that still Dr. Herrich-Schäffer, who has seen the original of Hübner's figure, gives a description and figure (337) which represents pretty accurately his *concolor*, though the male certainly does not belong to that species; and he adds that both Hübner's figure and Treitschke's description are quite insufficient (in the absence of the original specimen) to enable anybody to arrive at a definite conclusion respecting them. As stated by M. Guenée, Herrich-Schäffer's figures and description of the ♀ *extrema* certainly accord well with *concolor*, Gn., but he figures and describes the ♂ as an insect of very different appearance, and seems pretty positive that he represents the corresponding sexes.

Treitschke bears out this latter opinion, for he also describes two very dissimilar insects as the respective ♂ and ♀ of Hübner's *extrema*, remarking to the effect that "*any one would take them for distinct species were not the fact of their being the sexes entirely beyond dispute.*"

To us this same male appears to be a rich dark example of *Helmanni*, Eversmann, very pale females of which species (in fact the females usually are very pale) are of frequent occurrence, so that little doubt can remain but that the *extrema* of Hübner is far more likely to be identical with the *Helmanni* of Eversmann than with the *concolor* of Guenée, and *à fortiori* with *Bondii.*

With a note from Dr. Staudinger's valuable "Catalogue of European Lepidoptera," I close these remarks. He places Herrich-Schäffer's figures (332—3) of *extrema* as synonymous with the *fulva* of Hübner; while under *T. extrema* he refers to Hübner's fig. 412, places the insect represented by Herrich-Schäffer's figure 337 (437 by error in Stdgr. Cat.), and sinks without doubt M. Guenée's *concolor*.

ACIDALIA SUBSERICEATA, Haw. and another, *versus* A. MANCUNIATA, mihi.

Under the name of *Acidalia veterata*, Mr. C. S. Gregson, assisted by Mr. E. Newman (The Entom., vol. iii. p. 160) has described an insect which he considers to be distinct from *A. subsericeata*, and the true type of a species, of which *A. mancuniata* is a sexual or stunted or both sexual and stunted form. Under these circumstances he is of opinion that the name *mancuniata* should be dropped, and his own —*veterata*—retained to indicate the Lancashire "wave."

If it turn out that *A. veterata*, Greg., and *mancuniata*, mihi, are parentally identical, the latter being the less favoured offspring in point of size, then the question, (i. e., if it be a question,) remains for the decision of somebody more able and less partial than, in this case, either Mr. Gregson or I can possibly be, "*Which name shall take priority?*"

If on the other hand, and this would seem to require even a greater amount of judgment and discrimination, these rival candidates should be found to be both distinct from *A. subsericeata* and from one another, then the sooner *A. veterata* takes its place in our lists the better.

But a third solution of the difficulty is not beyond the bounds of possibility; for it may so happen that neither is distinct from *subsericeata*, and then —— why, then Mr. Gregson and I will find ourselves much in the position of the two cock-robins in Kingsley's "Water-babies," who fought for the possession of a worm, and when one of them came off victorious the vanquished swore that it was not a worm at all. And this climax seems by no means improbable, for if all accounts be trustworthy an ingenious theory has actually already been foreshadowed that "*mancuniata is subsericeata only with a different form of larva!*" so, henceforth, if this hypothesis be adopted, our friends Bates and Wallace may revel to their heart's content in the accession of a new and undisputed instance of "dimorphism in the larval state."

NEW BRITISH SPECIES IN 1866.

DIANTHŒCIA CÆSIA, S. V.

Truly this land of Sweetwilliams, pinks, campions and catchflies is rich in *Dianthœciæ*; so rich that, being naturally timid, I am afraid to reckon up the number of candidates belonging to the group, which have of late years been nominated for the honour of a place in the British cabinet; but *cæsia,* he at any rate will stand, for "*quocunque jeceris stabit*" is the motto under which he has long flourished.

Although Mr. Edwin Shepherd possesses a Bentleyan specimen, said to have been taken many years ago in Yorkshire, the species has been so long an absentee from our lists that the occurrence of *D. cæsia* during the past season in the Isle of Man may be safely regarded in the light of a fresh discovery, or at least equivalent to one.

For this interesting addition to our steadily swelling list of *Dianthœciæ,* we are indebted to Messrs. Gregson, Greening and Hopley, and it has also been taken by Messrs. Bleakley and Parry, the last-named of whom, by some painful combination of circumstances, evidently beyond his control, introduced it to the British public in the pages of "The Entomologist," (vol. iii. p. 104,) under the name of

Mamestra auredo, a palpable *lapsus calami* for *Mamestra arida* of Lederer, which, supposing the "i" to be long, would in the Lancashire dialect sound to southern ears pretty much as we should pronounce "*aurēdau.*" It is perhaps superfluous to add that Lederer's *Mamestra arida,* which he described in 1855, in the "Verhandlungen des zoologisch-botanischen Vereins," has no possible connexion with the *Dianthœcia cæsia* of the Vienna Catalogue.

On account of the darker tints, &c. which appear to be constant in the Manx *cæsia,* as compared with continental types, Mr. Gregson has proposed (Entom. iii. p. 103) to designate this race of the species under the fantastic but still very appropriate name of "*Manani,*" (after Manan, first king of Man,) for why should not *cæsia* bear a regal title? "*Aut Cæsia aut nullus,*" say I.

Mr. Hopley has, in a very pleasing manner, depicted the beauties and the dangers of the locality in which *cæsia* occurs in the pages of "The Entomologist's Monthly Magazine" (vol. iii. p. 88).

XYLINA ZINCKENII, Tr. (fig. 7).

This startling and splendid acquisition to our *Noctuina* was made by an incipient, a Mr. Harrington of Bermondsey, last September, somewhere in the neighbourhood of New Cross; the said collector, I am informed, observed it settled low down on the trunk of a tree whilst engaged in the pursuit of pupa-digging: he placed a box underneath it, and giving the insect a touch it fell into it motionless.

The specimen which, with the exception of trifling injuries about the cilia, is in capital condition, was exhibited as an undetermined new British species by Mr. E. G. Meek, at the second November meeting of the Entomological Society of London, but was first identified and brought forward as the true *Zinckenii* of Treitschke in "The Entomologist's Monthly Magazine" (vol. iii. p. 163).

At first sight *Zinckenii* bears so much superficial resemblance to an *Acronycta*, that M. Guenée's remarks—"*La description de Fabricius** *lui convient assez, mais comment concevoir qu'il donne à cette Noctuelle la taille et le port de Psi, à quelque abus des comparaisons qu'on soit habitué chez cet auteur! et puis il est peu probable que Fabricius ait connu une espèce qui devait être si rare de son temps, je n'ose donc lui restituer son nom*"—I confess surprise me; nor does it cause me wonder that several excellent Entomologists have, on seeing Mr. Meek's specimen, attributed it to the genus *Acronycta.* On a cursory view, its tints remind one considerably of *Xylina conformis*, but the form of the fore-wing assimilates much to that of *Hadena.* On more careful inspection, however, the robust, square, well-defined thorax and the depressed abdomen incline us, in spite of the shape of the wings, to seek its prototype among the *Xylinidæ.*

The figure given at the commencement of this volume renders unnecessary any attempt at a redescription of the markings of this handsome moth, but it is impossible by any engraving to convey to us an adequate idea of the *moiré* lustre, the rich faintly-violet tints of silvery grey, or the striking contrasts of light and shade which cause this insect, as we view it from different aspects, to appear as if now one part, now another stood forth from the wing in bold relief, deceiving our sense of sight by an optical illusion, which impressive as it is by day is yet intensified by lamp or gas light.

Zinckenii is a scarce insect on the continent; M. Guenée gives Sweden and the north of Germany as its localities, and September as the date of its appearance.

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* Of *Noctua lamda*, Ent. Syst. iii., 2, 106.

The larva is unknown.

APLASTA ONONARIA, Fuessly.

For this grand addition to our *Geometridæ* we are indebted to my friend Mr. Bernard Piffard, who at page 110 of the 3rd volume of "The Entomologist's Monthly Magazine," records his capture of it in the Warren at Folkestone, on or about the 18th of last July, amongst *Ononis arvensis.*

The following particulars relating to this extraordinary species, gleaned principally from M. Guenée's work on the *Phalénites,* may interest some of the readers of "The Annual."

The genus *Aplasta,* Hb.; H.-S.; Led.; Gn.; Stdgr.; =*Fidonia,* Dup.;=*Cabera,* Tr.; Bdv. is placed by Guenée between *Halia,* Dup. (*Tephrina,* Gn. intervening) and *Strenia,* Dup. (*Psamatodes,* Gn. intervening).—Staudinger, on the other hand, places it between *Scoria,* Stph. and *Sterrha,* H.-S. (*Gypsochröa,* Hüb., containing but one species, *G. renitidata,* intervening between it and the latter.)

Aplasta is most nearly allied to *Tephrina,* from which, however, it is readily separable, 1mo, by the antennæ being simple and velvety in both sexes, and entirely destitute of ciliation; 2ndo, by the tongue being rudimentary; 3tio, by the hind-wings being rounded; 4to, by the absence of lines, &c., and besides these it has in other respects a *facies* peculiar to itself. But the stability of the genus is still more strongly justified by a reference to its larva, which, in the singularity of its shape and downy clothing, differs completely from that of any known *Geometer.*

Aplasta contains only the one species under notice, Hübner's *A. sudataria* and *fœcataria* being considered by both Staudinger and Guenée as forms of *ononaria.*

Description of *A. ononaria.* Alar expanse about 1″. Wings dull ochreous, entirely irrorated with atoms of a brick-red colour, with an ill-defined and barely distinguishable central shade, formed by the accumulation of the aforesaid atoms, common to the four wings. The under surface has a corresponding shade, which is more perceptible and of a blackish hue. The hind-wings are clearer and of a more yellowish tint than the fore-wings. The sexes are very much alike.

It is found in France (being common in the neighbourhood of M. Guenée's own residence, Châteaudun), and in the north of Germany, in dry woods amongst *Ononis spinosa;* here in England it would appear to frequent *Ononis arvensis.*

Ononaria may be started up in its localities by trampling through the *Ononis.* Its flight is dull and heavy. According to M. Guenée it appears in May, and then again in July and August; but Duponchel records it as emerging all through the summer months.

The larva is short, fusiform, fat, without protuberances of any kind, and its whole body is furnished with a short stiff down; in colour it is pale, dirty-green, with a darker dorsal vessel, and paler, less distinctly expressed spiracular lines; it feeds on *Ononis* in April and June, and is remarkably sluggish, showing no disposition to ramble from its food-plant, for which reason it is, says M. Guenée, readily obtained in France by cutting or mowing the tufts of "rest-harrow," ("*Bugrane*").

The chrysalis is enclosed in a cocoon amongst moss.

SCOPARIA BASISTRIGALIS, mihi.

This large and (for a *Scoparia*) rather handsome species, as stated at page 1 of the 3rd volume of "The Entomologist's Monthly Magazine," wherein it is brought forward as a species new to science, cannot possibly be confounded with any other *Scoparia*, unless it be *Sc. ambigualis*, to which it is rather closely allied; the characters, however, there pointed out, especially those relating to the shape of fore-wing, direction of first line, &c., &c., are amply sufficient to separate it from that species.

The ♀ *basistrigalis* frequently presents large and strongly-marked specimens, and is liable to a curious form of aberration—of which several examples have come under my notice,—approaching melanism, a general mottling of the fore-wing with dark-coloured scales, giving rise to a rich dark velvety appearance.

It is a considerable source of satisfaction to me that Mr. Dale should have had by him for years, and have ticketed as probably new, a well-marked specimen of *basistrigalis*.

PEMPELIA SUBORNATELLA, Zeller; SERPYLLETORUM, Z.; H. S. 62.

For this interesting addition to our "knot-horns" we are indebted to Mr. N. Greening, of Warrington, who discovered it during the past season in the Isle of Man, in which locality it has also been taken by Messrs. Gregson and Hopley.

The synonymy of the *dilutella* of our cabinets has hitherto been so unsatisfactory that until very lately it would have been a bold thing for any British Entomologist to have attempted to decide upon the identity of either it or the species under consideration.

Thanks, however, to Mr. Doubleday's zeal we have at length arrived at something like a definite solution of the difficulty, through the assistance of that accomplished Lepidopterist, Professor Zeller, who has pronounced the so-called *dilutella* of our collections to be the true *adornatella* of Treitschke (re-described by Zeller himself in the Isis) and distinct from his *subornatella*, with which latter there cannot be a shade of doubt the Manx *Pempelia* is specifically identical, for it corresponds exactly with continental types of that species which Mr. Stainton some time ago received direct from Prof. Zeller.

The *dilutella* of Duponchel, (if this be the *dilutella* of Hübner also I know not,) which continental authors consider to be the *obductella* of Fisher von R., has not yet been detected in this country.

The most satisfactory conclusions may be arrived at from Zeller's papers on *subornatella* and *adornatella* in the Isis for 1846, and as Mr. Stainton has been at pains to write out translations of them for my special guidance, it will be best, I think, to place them in their entirety before the readers of "The Annual."

(*Translated from the Isis*, 1846, p. 768.)

PEMPELIA SUBORNATELLA, Z.

Alis anterioribus læte brunneis, costa, fascia prope basim strigisque albidis, priore angulata, posteriore subarcuata, puncto gemino nigro albido-cincto, serie punctorum nigrorum marginali.

Phycis subornatella, Duponchel, p. 287, pl. 283, fig. 5.
Pempelia serpylletorum, Zeller, Isis, 1839, p. 179.
Var. *b*.—Alis anterioribus dilute badiis, ceterum ut *a*.

This species, which Duponchel is disposed to consider as a local variety of *Ornatella*, differs from that most certainly as a distinct species, by the deep, much more brown-red ground colour, by the completeness of the two transverse lines, which at least between the median and subdorsal veins are never interrupted by the ground colour, by the presence of a whitish shady-fascia between the base of the wing and the first transverse line, by the want of black longitudinal spots before and behind the second transverse line.

From *Adornatella* it is distinguished by the paler white of the anterior wings, the presence of the whitish fascia, the slight angles of the second transverse line.

From *Petrella* by its much smaller size, the dark and untransparent posterior wings, the presence of the whitish fascia of the anterior wings, the livelier colouring.

From *Sororiella* and *Thymiella* by the much deeper, brown-yellow ground colour, the thicker transverse lines on the anterior wings, &c.

Size of the smaller and smallest specimens of *Ornatella*. Head and thorax brownish loam-yellow. Labial palpi of the male of the size and form as in *Ornatella*. The tuft of the maxillary palpi of the male rust-yellow, nearly as long as the labial palpi; the maxillary palpi of the female, visible at the side of the face, rather thick, filiform, small. Tongue scaled above. Scale-bristle of the antennæ as in *Ornatella*. Legs brown-grey, tarsi brown with whitish ends of the joints; middle and hinder tibiæ pale grey, rather clouded before the apex with dark bands. Abdomen brown-grey, with yellowish edges of the joints, which in the female are narrower than in *Ornatella*; anal end yellow.

Anterior wings with the apex rather blunter than in *Ornatella*, lively brown yellow; whitish along the costa as far as the first transverse line, and then on the disc from the costa more or less deeply inwards. Not far from the base is an oblique, tapering (generally not completely reaching the inner margin), whitish shady-fascia, which anteriorly unites with the first transverse line, and with it includes a large, somewhat angular, transverse spot, which stands obliquely on the inner margin; this often has towards the costa and on the subdorsal vein regular black scales, collected into a spot. The first transverse line is thick on the costa and makes first a very acute and then on the subdorsal vein an obtuse angle; on the costa it is often margined with black scales towards the disc, but always margined broadly with the ground colour, its angles contain clusters of black scales. On the disc the whitish scales rarely and only singly attain the inner margin; generally they only surround the two black central spots, these are round or slightly streak-shaped, and the whitish encompassing of the larger is generally prolonged as a streak to a black spot on the first transverse line. The second transverse line makes a few small angles, between which it is slightly curved posteriorly and slightly serrated; it is gaily margined with brown-yellow, most darkly on the costa, not rarely black scales occur in this bordering, which also sometimes form spots, but never streaks on the veins as in *Ornatella*. Before the hind margin is a row of six black spots as in that species, on a whitish ground. Cilia brown-grey, with pale fine transverse lines and pale tips.

Posterior wings dark brown-grey, darker at the hind margin; the paler cilia intersected by a darker line at the base.

Underside shining brown-grey; the anterior wings darker, with the costa very narrowly yellowish, and with a yellow spot before the apex, beneath which the second transverse line of the upper side shines faintly through. Cilia lighter, otherwise as on the upperside of the posterior wings.

Variety *b* only differs by the beautiful pale brown-red margins of the transverse lines.

The female is distinguished by the less white scaling of the disc, whereby the ground colour is more prevalent. In one specimen the space between the fascia and the first transverse line is entirely dusted with black.

This species occurs at Frankfort-on-the-Main (v. Heyden), in Bohemia, Hungary and Mecklenburg (F. v. R.), and at Dresden (v. Tischer), around Vienna, and is not at all scarce on the Alps (Mann).

About Glogau it is not at all scarce in light, sunny places in fir and birch woods, where thyme (*Thymus serpyllum*) grows abundantly, at the end of June and beginning of July; it flies most readily towards evenings: only rarely does it occur amongst *Ornatella* and *Adornatella*, of which it has the habit. The larva doubtless feeds on thyme, on which I have already found it; however, I have not bred or described it. It lives in silken tubes upon the ground amongst the plants of thyme, and is pale with some dark longitudinal stripes.

Note.—Duponchel has figured this species incorrectly: instead of the fascia of the anterior wings he represents an interrupted transverse line, sharply angulated in the middle, without connection on the costa with the following transverse line. I am sorry that he did not retain the name previously given by me: since the similarity of the names, as *Ornatella, Adornatella, Subornatella,* which could with equal right be given to each of the three species in succession, only increases the possibility of the confusion of allied species.

(*Translated from the Isis,* 1846, *p.* 770.)

PEMPELIA ADORNATELLA, Treitschke.

Alis anterioribus rufo-luteis, costa strigisque duabus angulatis albidis, priore obsoleta, posteriore subserrata, punctis duobus nigris interjectis albido-cinctis, serie punctorum nigrorum marginali.

Phycis adornatella, Tr. x. 3, 172, 174—Alis anticis fusco-cinereis, linea flexuosa ad apicem atomisque numerosis albis, punctis duobus in medio nigris; posticis cinereis.

Phycis adornatella, Duponchel, p. 285, pl. 234, fig. 4.

Pempelia adornatella, Zeller, Isis, 1839, S. 179—Vierter Bericht des schlesischen Tauschver. 1843, S. 15.

Var. *b.* striga priore interrupta.

Var. *c.* striga posteriore ante apicem bis interrupta.

Var. *d.* obscura, strigis obsoletis lateque interruptis.

Var. *e.* alis anterioribus latioribus, strigis ut in *b* et *c* interruptis.

Differs from *Ornatella* by the dirty, reddish-loam yellow ground colour, by the strongly angulated interrupted second transverse line, by the brownish instead of black spots on the anterior wings, excepting the two central spots and the marginal line.

Differs from *Subornatella* by the want of the fascia between the base of the wing and the first transverse line.

Differs from *Thymiella* and *Sororiella* by its much darker and dirty colour.

Differs from *Petrella*, to which it comes nearest, by its considerably smaller size, the want of a darkened spot-like place on the inner margin before the first transverse line and the indented second transverse line, whereas *Petrella* has only a sinuated one.

Size variable, always below *Ornatella*. Head and thorax reddish-yellow, dusted with brownish; form of the palpi and the antennæ as in the two previous species: the labial palpi externally brown-red towards the tip: tuft of the maxillary palpi rust-yellow. Thorax beneath reddish-white. Legs externally reddish-grey; the middle and hinder tibiæ with darker bands: tarsi brownish, with white ends of the joints. Abdomen yellowish-grey, with yellowish hinder margins of the rings and yellowish anal end.

Anterior wings narrower and with the costal apex blunter than in *Ornatella*. Ground colour dark reddish-loam yellow, with the costa dusted with whitish to the second transverse line, and certainly on the disc more plentifully and broadly whitish. The first transverse line, going obliquely from the costa to the inner margin, forms several angles, in which and at their tips stand brown darker spots; it is generally faint, and in variety *b* interrupted at the same place as in *Ornatella*. The two black spots are of nearly equal size. The lower stands in a whitish streak, which goes from the first to the second transverse line. The whitish dusting is never so pale nor so abundant as in *Subornatella* and *Ornatella*. The second transverse line, broadly margined by the ground colour, and sometimes edged with dark longitudinal streaks on the veins, forms first opposite the lower central spot, then before the subdorsal vein, an angle towards the disc; between these it is slightly and indistinctly serrated. Before the hind margin is a row of black spots on a white dusted ground, which stand as in *Ornatella* and *Subornatella*, but are never so distinct and large. The brown grey cilia, as in those species, are marked with fine pale transverse lines.

Posterior wings brown-grey; a darker transverse line before the base of the paler cilia.

Underside shining brown-grey; in the female unicolorous; in the male the hind wings are pale grey, with the veins darker: all have a dark intersecting line near the base of the paler cilia. The anterior wings have on the costa before the apex a pale spot, under which, more faintly than in the allied species, a trace can be perceived of the second transverse line: in the female the spot is quite faint, and of the showing-through transverse line nothing at all to be seen.

Of the varieties only *d* and *e* are of especial importance; is only distinguished by the interruption of the first transverse line, between the median and subdorsal veins. *c* exhibits an interruption of the second transverse line at the two upper places, as in *Ornatella* (both sexes); *d* is particularly dark, with slight whitish dusting, the transverse lines only occur as faint fragments (39). Var. *e*, a male, communicated by Fisher von Röslerstamm, as *Adornatella*, has broader and shorter wings: the transverse lines [veins?] are coloured brown before and behind the second transverse line, but not nearly so dark and conspicuous.

Fischer von Röslerstamm found this species on the borders of Bohemia and Saxony in May and June, and also received it from Hungary and Carniola. Von Heyden took it at Frankfort-on-the-Main, Mann not abundantly near Vienna, at Lichtenstein, in July. It also occurs at Frankfort-on-the-Oder, near Dantzig (v. Tiedemann), and at Glogau. It flies in dry weedy slopes and fields, often along with *Ornatella* and *Subornatella*, in June and the beginning of July. On the 29th of August I took on a quite open meadow in company with *Tortrix cespitana* and *conchana*, four specimens of both sexes, so that I suspect it is double-brooded. Their flight is slow: they repose on grass and stems of weeds. The larva is unknown.

Note.—Duponchel, who does not express himself confidently on the specific distinctness of *Adornatella*, a point which admits, however, of no doubt, does not figure the species correctly (on the plate he has it *Adoratella*). The second transverse line is without the characteristic angles, and the first begins thin on the costa and does not even reach the inner margin.

TORTRIX OCHREANA, Hübner (Fig. 6).

For this large and important addition to our *Tortricina* we are indebted to Mr. Philip H. Harper, who, while on a coleopterous collecting expedition, secured it in the neighbourhood of a fir wood.

It is first noticed as British in "The Entomologist's Monthly Magazine (vol. iii. p. 163).

The figure on the frontispiece of this volume will give a good idea as to markings, but a little requires to be said about colour.

The ground colour of the fore-wings is dull orange finely reticulated with faint brown, and the large V-like mark which obscures the outer half of the wing (formed by the junction on the inner margin of two *fasciæ*, one of which starts obliquely from about the middle of the costa, the other, parallel with the apical margin, by a broader origin from near the apex) is of a darker brown, with a slightly reddish tint. The arms of this V-mark enclose a somewhat kidney-shaped spot of the ground colour, and at the apical margin beyond the second *fascia* the ground colour is again visible.

On the continent *T. ochreana* has occurred at Thuringia in Saxony, in Silesia, and near Vienna. It has the reputation of frequenting fir woods, but beyond this little seems to be known of its habits.

DICRORAMPHA FLAVIDORSANA, mihi (Fig. 5).

This species comes between the *D. alpinana* and *D. petiverella* of our lists, the male partaking of the characters of the former, the female of those of the latter; the male, however, is readily separable from *alpinana* by its darker ground colour, from *petiverella* by the brightness of its oblique apical bands, and from both by the clearness of its conspicuous yellow dorsal patch; the female is not easily distinguishable from either sex of *D. petiverella*, though the apical oblique bands and the blue metallic lines between them are a trifle more evident than in that species.

Mr. Barrett's specimens (a ♂ and 3 ♀) were, two or three seasons since, beaten from a hedge near Haslemere; Mr. Meek's (a ♂ and a ♀) were taken on the coast of North Devon last August, amongst *Artemisia maritima;* I am unacquainted with the locality from which Mr. Doubleday obtained his example.

The Haslemere and North Devon specimens were exhibited (bearing my manuscript name of *flavidorsana*) by Mr. Meek at the second November meeting of the Entomological Society of London.

D. flavidorsana will be fully described in the January number of "The Entomologist's Monthly Magazine."

KENTISH TOWN,
Dec. 1866.

P.S.—Since the foregoing notes were written I find that *Eubolia mœniata* has been re-discovered near York by Mr. Prest, of that city.

H. G. K.

A Table of Local and Scarce British Lepidoptera captured in 1866.

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Erebia Epiphron (Cassiope)	N. Perthshire	T. Blackburn	July	E. M. M. iii. 116	At a lower elevation than usual.
Limenitis sybilla	Woolmer Forest	C. G. Barrett	...	C. G. B. in litt.	At bramble-bloom. New locality.
Procris Geryon	Malvern	Rev. E. H. Todd	May 24	MS.	
Sphinx convolvuli	Bury	E. Skepper	Sept. 16	E. S. in litt.	In the open street.
Chœrocampa celerio	Kendal	... ...	June 4	E. M. M. iii. 138	Recorded by Mr. Hodgkinson.
,, ,,	Isle of Wight	J. Ingram	Dec. 1865	Entom. iii. 42	Bred.
Macroglossa fuciformis	Coombe	G. B. Longstaff	June (b.)	E. M. M. iii. 138	At flowers of *Lychnis* and *Ajuga*.
Sesia chrysidiformis	Folkestone	E. G. Meek	July	E. M. M. iii. 69	Several specimens in fine condition.
,, ichneumoniformis	Folkestone	E. G. Meek	July	E. G. M. in litt.	
,, philanthiformis	Isle of Man	C. S. Gregson	May	Entom. iii. 103	Larvæ in stems of sea-pink.
Dicranura furcula	Near York	G. Jackson	Oct.	G. J. in litt.	Larvæ on sallow.
,, ,,	Lee	W. West	July 10	Entom. iii. 167	Emerging between 8 and 9, P.M.
,, bicuspis	Leominster	— Hutchinson.	...	Entom. iii 167	Larva on alder.
Stauropus fagi	Exeter	Rev. J. Hellins	June 29	E. M. M. iii. 112	Had been attracted to light.
Notodonta dromedarius	Tuddenham	E. Skepper	Sept. 7	E. S. in litt	Also by C. Miller at W. Wickham.
,, ,,	Warslow	Rev. H. A. Stowell	May 17	H. A. S. in litt.	Bred from larvæ off alder.
Philodontis palpina	Reigate	J. B. Blackburn	May	J. B. B. in litt.	
,, ,,	Near York	T. J. Carrington	May & July	T. J. C. in litt.	Off gas lamps.
,, ,,	Minehead	A. E. Hudd	May (e.)	A. E. H. in litt.	New locality.
Lophopteryx carmelita	W. Wickham	W. Watkins	April 27	Entom. iii. 87	Off the bishop's fence.
Clostera reclusa	Tuddenham	E. Skepper	Sept. 15	E. S. in litt.	Larvæ common between leaves.
,, curtula	Near York	T. J. Carrington	May & July	T. J. C. in litt.	Bred two broods; also by C. Jackson.

Demas coryli	W. Wickham	W. Rogers	May 8	W. R. in litt.	On beech.
Lithosia aureola	Loughton	E. G. Meek	June	E. G. M. in litt.	Beaten from hawthorn.
,, helvola	Headley Lane	Dr. B. Gill	July (e.)	B. G. in litt.	Several specimens.
,, complana	Folkestone	E. G. Meek	June	E. G. M. in litt.	
,, ,,	Near Ipswich	G. A. J. Rothney	July 26	G. A. J. R. in litt.	Swarming—26 in one sweep of the net.
,, caniola	Howth	C. S. Gregson	Aug. 20	Entom. iii. 151	
,, ,,	Waterford	Dr. Wright		E. M. M. iii. 110	New locality.
,, quadra	Woolmer Forest	C. G. Barrett		C. G. B. in litt.	
Nudaria senex	Near York	T. J. Carrington	June 21	T. J. C. in litt.	Several, in fine condition.
Trichiura cratægi	Cotswolds	Rev. E. H. Todd	Sept. 7	MS.	At light.
Bombyx castrensis	Near Colchester	H. Laver		E. M. M. iii. 95	Larvæ common.
,, ,,	Gravesend	C. Miller	July 13	C. M. in litt.	Larvæ on *Artemisia.*
Endromis versicolora	Tilgate	E. G. Meek	March	E. G. M. in litt.	A single ♂ attracted.
Platypteryx falcula	Frankton	G. B. Longstaff	July 4	E. M. M. iii. 138	By beating.
,, hamula	Darenth	E. G. Meek	June	E. G. M. in litt.	Several specimens.
Limacodes asellus	Epping	E. G. Meek	June	E. G. M. in litt.	Beaten out.
,, testudo	W. Wickham	W. Rogers	June 12	W. R. in litt.	Beaten from oak.
Cymatophora duplaris	W. Wickham	C. Miller	July 14	C. M. in litt.	Mothing.
,, ocularis	Bury	E. Skepper	Nov. 1	E. S. in litt.	Three pupæ.
,, ,,	Worcestershire	A. Edmunds	May	MS.	Bred.
Acronycta leporina	Tuddenham	E. Skepper	Sept. 7	E. S. in litt.	Larvæ on birch.
,, ,,	Warslow	Rev. H. A. Stowell	June 25	H. A. S. in litt.	Bred from larvæ on alder.
,, ,,	Near Yotk	G. Jackson	June 28	G. J. in litt.	Two at sugar.
,, ,,	Clifton	A. E. Hudd	June 25	A. E. H. in litt.	Flying at dusk.
,, alni	Leominster	— Hutchinson		Entom. iii. 152	
,, ,,	Near Derby	V. H C	August	H. A. S. in litt.	Two larvæ taken.
,, ,,	Brockenhurst	Rev. P. Andrews	May 31	Entom. iii. 115	
,, ,,	Haslemere	C. G. Barrett	June 3	C. G. B. in litt.	Bred. See E. M. M.
Leucania straminea	Plumstead	H. Vaughan	July	H. V. in litt.	
,, pudorina	Near York	G. Jackson	June	G. J. in litt.	At sugar; also by J. T. C.
,, phragmitidis	Plumstead	H. Vaughan	July	H. V. in litt.	
Tapinostola Bondii	Folkestone	E. G. Meek	June	E. G. M. in litt.	Very scarce this year.
Nonagria despecta	Epping	Dr. B. Gill	July (e.)	B. G. in litt.	Not rare.
,, geminipuncta	Needham Market	E. Skepper	Aug. 7	E. S. in litt.	Pupæ in reeds. Common.
Dipterygia pinastri	Hampstead	H. Vaughan	Sept.	H. V. in litt.	

Local and Scarce British Lepidoptera captured in 1866—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Xylomyges conspicillaris	Worcestershire	Rev. E. H. Todd	March 29	MS.	From a pupa dug. See also Entom. iii. 167.
,, ,,	Worcestershire	Rev. E. Horton	Apr. 24, 27	E. M. M. iii. 22.	Two captured. One cripple bred.
Aporophila australis	Ventnor	J. B. Blackburn	Sept.	J. B. B. in litt.	In beautiful condition.
Heliophobus hispida	Clifton	A. E. Hudd	Sept.	A. E. H. in litt.	Flying over grass. New locality.
Luperina cæspitis	Near York	T. J. Carrington	Sept. 7	T. J. C. in litt.	Fine specimen off gas lamp.
Mamestra furva	Warslow	Rev. H. A. Stowell	July	H. A. S. in litt.	One at light.
Apamea unanimis	Near York	G. Jackson	June	G. J. in litt.	At sugar. Also by T. J. C.
Caradrina alsines	Haslemere	C. G. Barrett	...	C. G. B. in litt.	At sugar.
Agrotis aquilina	Near York	T. J. Carrington	August	T. J. C. in litt.	At sugar.
,, agathina	Shirley	C. Miller	Aug 27	C. M. in litt.	Mothing.
,, ,,	Near York	T. J. Carrington	Aug. 25	E. M. M. iii. 111	At flowers of ling.
,, præcox	Yarmouth	E. Skepper	Aug. 21	E. S in litt.	On the sand hills
Noctua glareosa	W. Wickham	W. Rogers	Sept. 12	W. R. in litt.	At sugar. Also by C. M.
,, conflua ?	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117	
,, ditrapezium	Haslemere	C. G. Barrett	...	C. G. B. in litt.	Bred. Also on herbage by night.
,, neglecta	Near York	G. Jackson	May...	G. J. in litt.	In larval state.
Tæniocampa leucographa	Haslemere	C. G. Barrett	Spring	C. G. B. in litt.	At sallows.
,, opima	Near York	W. Prest	...	W. P. in litt.	
,, ,,	Near York	T. J. Carrington	Apr. & May	T. J. C. in litt.	Two at sallows.
,, populeti	Near York	G. Jackson	April	G. J. in litt.	At sallows. Also by T. J. C.
,, miniosa	Haslemere	C. G. Barrett	...	C. G. B. in litt.	At sallows.
,, ,,	Darenth	E. G. Meek	March	E. G. M. in litt.	Fine series at sallows.
,, ,,	Darenth	Dr. B. Gill	April (b)	B. G. in litt.	Beaten from sallows.
,, ,,	Devon	G. C. Bignell	April 13	Entom. iii. 74	Several at sallows.
Cerastis erythrocephala	Near Canterbury	G. Parry	Oct. (e.)	G. B. in litt.	
Dasycampa rubiginea	Torquay	... ...	Autumn	J. H. in litt.	
,, ,,	Isle of Wight	James Ingram	...	J. I. in litt.	Also at Exeter.
,, ,,	Clifton	A. E. Hudd	Oct. 27, 30	A. E. H. in litt.	At ivy.
Hoporina croceago	Clifton	J. Hutchins	Nov. 1	A. E. H. in litt.	A few at ivy.

Hoporina croceago	Devon	G. C. Bignell	...	Entom. iii. 74	At sallows.
„ „	Haslemere	C. G. Barrett	April	C. G. B. in litt.	At sallows.
„ „	Darenth	E. G. Meek	March	E. G. M. in litt.	About a dozen at sallows.
Xanthia citrago	W. Wickham	C. Miller	Sept.	C. M. in litt.	At sugar.
„ aurago	Clifton	A. E. Hudd	Oct.	A. E. H. in litt.	A few at ivy.
„ „	S. Norwood	G. A. J. Rothney	Oct. 2	G. A. J. R. in litt.	A specimen at light.
„ „	Norwood	C. Miller	Sept.	C. M. in litt.	At lamps.
„ gilvago	Near Derby	G. Baker	June 7	E. M. M. iii. 45	Larvæ off wych-elm.
Cirrhœdia xerampelina	Near York	G. Jackson	Sept.	G. J. in litt.	Bred: larvæ off ash.
„ „	Near York	W. Prest.	Aug. (e.)	W. P. in litt.	Also by T. J. C.
Dianthæcia capsophila	Isle of Man	C. S. Gregson	May	Entom. iii. 103	New locality: also by Messrs. Hopley & Parry.
„ „	Isle of Man	H. Vaughan	Sept.	H. V. in litt.	Larvæ in capsules of *Silene.*
Dasypolia templi	Clifton	J. Harding	Oct.	A. E. H. in litt.	On a gas lamp.
„ „	Taunton	A. J. Spiller	Nov. '65	Entom. iii. 30	A ♀ at light.
Epunda lutulenta	Burford	Rev. E. H. Todd	...	Entom. iii. 168	A specimen seen.
„ „	W. Wickham	C. Miller	Sept. 14	C. M. in litt.	At sugar.
Phlogophora empyrea	Near Arundel	R. D. Drewitt	Oct. '65	Entom. iii. 12	Also near Shoreham and Newhaven. New locality.
Aplecta occulta	N. Perthshire	T. Blackkurn	July	E. M. M. iii. 117.	Two started.
Hadena suasa	Manchester	C. Campbell	June 21	E. M. M. iii. 45	
„ genistæ	Wimbledon	J. B. Blackburn	June (b.)	J. B. B. in litt.	
„ rectilinea	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117.	Several.
Xylina semibrunnea	Clifton	A. E. Hudd	Oct.	A. E. H. in litt.	A few at ivy.
„ „	Near Sevenoaks	Dr. B. Gill	Oct. (e.)	B G. in litt.	At sugar: very skittish.
„ petrificata	Clifton	A. E. Hudd	Oct.	A. E. H. in litt.	A few at ivy.
Cucullia asteris	W. Wickham	C. Miller	Aug. 13 & 18	C. M. in litt.	Larvæ on *Solidago.*
„ gnaphalii	W. Wickham	C. Miller	Aug. 13	C. M. in litt.	Larvæ on *Solidago.*
Heliothis marginata	Warslow	Rev. H. A. Stowell	June 2	H. A. S. in litt.	One bred.
„ armigera	Scarborough	W. Simmons	Summer	W. S. in litt.	A fine ♀.
Anarta melanopa	N. Perthshire	E. M. Geldart	July	T. B. in litt.	On summit of Schiehallion.
Agrophila sulphuralis	Near Bury	J. W. Whelan	June	J. W. W. in litt.	Three specimens.
Erastria venustula	Epping	Dr. B. Gill	June (m.)	B. G. in litt.	Scarce.
„ „	Loughton	E. G. Meek	June	E. G. M. in litt.	Scarce.
Hydrelia unca	Near York	G. Jackson	June	G. J. in litt.	Scarcer than usual.
Plusia interrogationis	Near Perthshire	T. Blackburn	July	E. M. M. iii. 117.	Common on the moors.
Toxocampa pastinum	Near York	G. Jackson	July	G. J. in litt.	A few at dusk.

Local and Scarce British Lepidoptera captured in 1866—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Stilbia anomala	N. Wales	Rev. E. Horton	...	E. H. in litt.	At Barmouth.
" "	Isle of Man	H. Vaughan	Sept.	H. V. in litt.	New locality.
" "	Tilgate	E. G. Meek	Aug.	E. G. M. in litt.	Several males.
" "	Haslemere	C. G. Barrett	...	C. G. B. in litt.	At heath bloom.
Catocala fraxini	Isle of Wight	"A Lady"	Sept. 13	Entom. iii. 152	A fine ♂ at rest.
Epione vespertaria	Near York	G. Jackson	July	G. J. in litt.	Very scarce this year.
Eurymene dolabraria	Epping	Dr. B. Gill	June (m.)	B. G in litt.	Scarce.
Pericallia syringaria	S. Norwood	G. A. J. Rothney	July 5	G.A. J.R. in litt	Mothing. Also by G. J., York.
Selenia illustraria	Woolmer Forest	C. G. Barrett	...	C. G. B. in litt.	
" "	Malvern	Rev. E. H. Todd	Aug. 15	MS.	One specimen.
Ennomos alniaria	From Gosport	Rev. J. Hellins	Aug. 28 and Sept. 13	E. M. M. iii. 112.	From eggs obtained by Mr. Lacy.
" "	From Gosport	W. Buckler	Aug. 28	E M. M. iii. 112.	Ditto.
" tiliaria	Near York	T. J. Carrington	Sept.	T. J. C. in litt.	At light: also by G. J.
" "	Norwood	C. Miller	Sept.	C. M. in litt.	At lamps.
" fuscantaria	...	Rev. J. Hellins	...	E. M. M. iii.	Bred.
" "	S. Norwood	G. A. J. Rothney	Oct. 2	G.A. J. R. in litt.	At light.
" erosaria	...	Rev. J. Hellins	...	E. M. M. iii.	Bred.
Nyssia hispidaria	Sheffield	J. Batty	April 21	Entom. iii. 87	Eggs of it obtained.
" "	Richmond, Surrey	E. G. Meek	March	E. G. M. in. litt.	In the Park.
" "	Richmond	T. Blackmore	March	T. B. in litt.	Rather commonly.
Cleora lichenaria	W. Wickham	C. Miller	April 14	C. M. in litt.	In larval state.
Boarmia abietaria	Frankton	G. B. Longstaff	June 30	E. M. M. iii. 138	
Tephrosia extersaria	Leith Hill	J. B. Blackburn	June	J. B B. in litt.	
" "	W. Wickham	C. Miller	June 7	C. M. in litt.	At sugar.
Dasydia obfuscata	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117.	Flying slowly on road-sides.
Psodos trepidaria	N. Perthshire	T. Blackburn	...	E. M. M. iii. 117.	Sparingly. On summits of mountains.
Geometra papilionaria	Shirley	C. Miller	April & May	C. M. in litt.	Larvæ on birch, also by G. A. J. R.
Iodis vernaria	Croydon	C. Miller	July 7	C. M. in litt.	By beating.
Phorodesma bajularia	Near York	T. J. Carrington	July 14	T. J. C. in litt.	Eggs obtained.

Phorodesma bajularia	Shirley	G. A. J. Rothney	Aug. 21	G.A. J. R. in litt.	Flying round oak.
Ephyra orbicularia	Near Haslemere	C. G. Barrett	Aug.	C. G. B. in litt.	Flying at dusk.
Asthena sylvata	Coombe	G. B. Longstaff	June 14	E. M. M. iii. 138.	By beating.
Eupisteria heparata	Near York	T. J. Carrington	July 1	T. J. C. in litt.	Flying.
Venusia Cambricaria	Cotswolds	Rev. E. H. Todd	July 20	MS.	Common.
Acidalia rubricata	Tuddenham	E. Skepper	June 9	E. S. in litt.	Trampled out.
,, rusticata	Isle of Portland	T. Blackmore	July (e.)	T. B. in litt.	
,, holosericeata	Near Bristol	A. E. Hudd	June	A. E. H. in litt.	From larvæ on *Helianthemum*.
,, circellata	Manchester	C. Campbell	July 15	E. M. M. iii. 90.	Eggs obtained.
,, straminata	Near Haslemere	C. G. Barrett	...	C. G. B. in litt.	On heaths.
,, mancuniata	Near Manchester	C. Campbell	July 26	E. M. M. iii. 90.	From eggs laid June 22 to 25.
,, strigilata	Folkestone	E. G. Meek	July	E. G. M. in litt.	Several specimens.
,, inornata	Near Bristol	G. Harding	July 30	A. E. H. in litt.	On fir trunks. New locality.
,, degeneraria	Isle of Portland	T. Blackmore	July (e.)	T. B. in litt.	
Aleucis pictaria	Loughton	E. G. Meek	April	E. G. M. in litt.	A fine series.
,, ,,	Epping	Dr. B. Gill	April (m.)	B. G. in litt.	Several. The locality is being enclosed.
Aventia flexula	Dorking	Dr. B. Gill	July (m.)	B. G. in litt.	Rare this season.
Scodiona belgiaria	Shirley	G. A. J. Rothney	June 2	G.A. J.R. in litt.	In a gravel pit. Also by C. M.
Fidonia pinetaria	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117.	Swarming in Black Forest.
Aspilates citraria	Ventnor	J. B. Blackburn	Aug. & Sept.	J. B. B. in litt.	Several specimens.
,, ,,	Deal	Dr. B. Gill	Aug. (e)	B. G. in litt.	Rarer than usual.
Larentia ruficinctata	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117	
,, salicata	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117	
Emmelesia unifasciata	Near Preston	J. B. Hodgkinson	Aug. (b.)	E. M. M. iii. 111	About 40 specimens.
,, blandiata	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117	
Eupithecia venosata	Near York	T. J. Carrington	June	T. J. C. in litt	Among *Silene inflata*. Also by G. J.
,, linariata	W. Wickham	C. Miller	Aug. 20	C. M. in litt.	Also by E. S. at Lowestoft.
,, pulchellata	Lynton	E. G. Meek	July	E. G. M. in litt.	Amongst fox-gloves.
,, lariciata	Near Bristol	J. Harding	June	A. E. H. in litt.	New locality.
,, ,,	Leith Hill	J. B. Blackburn	June	J. B. B. in litt.	
,, ,,	Frankton	G. B. Longstaff	June	E. M. M. iii. 138	Common. By beating larches
,, ,,	Near York	T. J. Carrington	May 20	E. M. M. iii. 45	
,, albipunctata	Near York	W. Prest	...	W. P. in litt.	In larval state. Also by T. J. C.
,, valerianata	Near Derby	G. Baker	June 12	E. M. M. iii. 45.	From *Valeriana officinalis*.

Local and Scarce British Lepidoptera captured in 1866—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Eupithecia trisignaria	Near York	W. Prest	...	W. P. in litt.	Larvæ. Also by G. J.
,, fraxinata	Near York	G. Jackson	June	G. J. in litt.	Pupæ under moss on ash.
,, indigata	Near Bristol	J. Harding	June	A. E. H. in litt.	Off fir trunks.
,, ,,	Near York	T. J. Carrington	May	T. J. C. in litt.	On fir trees. Also by G. J.
,, ,,	Near Dorking	Dr. B. Gill	June (b.)	B. G. in litt.	Beaten from firs.
,, campanulata	Worcester	Rev. E. Horton	...	E. H. in litt.	Taken in larval state.
,, ,,	Near Bristol	A. E. Hudd	Aug.	A. E. H. in litt.	In larval state.
,, tenuiata	Near York	T. J. Carrington	July	T. J. C. in litt.	Larvæ in sallow catkins.
Collix sparsata	Near York	G. Jackson	June	G. J. in litt.	Ova obtained.
Lobophora sexalata	Near Haslemere	C. G. Barrett	...	C. G. B. in litt.	Among sallows.
,, polycommata	Near Bristol	A. E. Hudd	...	E. M. M. iii. 22	New locality.
,, lobulata	Near York	T. J. Carrington	Mar. (e)	T. J. C. in litt.	Sitting on hedges.
,, ,,	W. Wickham	C. Miller	April	C. M. in litt.	Mothing.
Thera firmaria	N. Perthshire	J. Blackburn	July	E. M. M. iii. 117	Common. Also by G. J. at York.
Ypsipetes ruberaria	Near York	G. Jackson	June	G. J. in litt.	From larvæ taken in April.
Melanippe hastata	Ipswich	G. A. J. Rothney	July	G. A. J. R. in litt.	Common.
,, tristata	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117	
Anticlea berberata	Bury	E. Skepper	May	E. S. in litt.	Abundant.
Coremia munitata	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117	On mountains.
,, quadrifasciaria	Lowestoft	E. Skepper	July 2	E. S. in litt.	At rest on pales.
Camptogramma fluviata	Wandsworth	T. Blackmore	...	T. B. in litt.	Rather frequent.
,, ,,	Folkestone	E. G. Meek	July	E. G. M. in litt.	A fine ♂ by day.
Phibalapteryx lignata	Bury	E. Skepper	Oct. 4	E. S. in litt.	A ♂ at light.
,, ,,	Near York	T. J. Carrington	June & Aug.	T. J. C. in litt.	Two broods. Also by G. J.
,, ,,	East Cotswolds	Rev. E. H. Todd	Aug. 18	MS.	Abundant.
,, vitalbata	Leith Hill	J. B. Blackburn	June	J. B. B. in litt.	
Scotosia vetulata	Croydon	C. Miller	July 7	C. M. in litt.	By beating.
,, rhamnata	Croydon	C. Miller	May 19	C. M. in litt.	Larvæ on Buckthorn.
Cidaria psitticata	Near York	T. J. Carrington	Mar. (e)	T. J. C. in litt.	Hybernated but fresh.
,, picata	Minehead	C. Bonnor	July	A. E. H. in litt.	New locality.
,, sagittata	Chatteris	A. Fryer	Aug.	E. M. M. iii. 110	Larvæ plentifully on *Thalictrum.*

Eubolia mæniata	Near York	W. Prest	Aug. 19	MS.	Amongst broom.
Carsia imbutata	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117	
Lithostege griseearia	Suffolk	J. W. Whelan		J. W. W. in litt.	Two specimens
Madopa salicalis	Haslemere	C. G. Barrett		E. M. M. iii. 37.	A few specimens.
Hypena crassalis	Near Dorking	Dr. B. Gill	June (m.)	B. G. in litt.	Scarce this year.
Hypenodes albistrigalis	Near Bristol	A. E. Hudd	July	A. E. H. in litt.	
,, ,,	Barnstaple	E. G. Meek	July	E. G. M. in litt.	A wasted specimen.
,, costæstrigalis	Tilgate	E. G. Meek	Aug.	E. G. M. in litt.	
Aglossa cuprealis	Norwood	C. Miller ... [field	July 14	C. M. in litt.	In the house.
Agrotera nemoralis	Near Hastings	Rev. E. N. Bloom-	June 14	E. N. B. in litt.	A specimen in a wood.
Diasemia ramburialis	Lewes	G. H. Verrall	Oct. 29	E. M. M. iii. 163	New locality.
Paraponyx stratiotalis	Glan' Wootton	J. C. Dale	June 28	J. C. D. in litt.	New locality.
Acentropus niveus	Frensham	C. G. Barrett		C. G. B. in litt.	At a pond.
Botys hyalinalis	Reigate	Dr. B. Gill	July (b.)	B. G. in litt.	Not uncommon.
,, lancealis	Headley Lane	Dr. B. Gill	July (m.)	B. G. in litt.	One specimen.
Spilodes sticticalis	Deal	Dr. B. Gill	Aug. (e)	B. G. in litt.	Rare.
,, ,,	Tuddenham	E. Skepper	Aug. 8	E. S. in litt.	Trampled out.
Scopula alpinalis	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117	Flying rapidly.
Scoparia basistrigalis	Headley Lane	Dr. B. Gill	July (m.)	B. G. in litt.	One specimen.
,, ,,	Frensham	C. G. Barrett	July	C. G. B. in litt.	At sugar and on oak trunks.
,, ,,	Sidcup	H. Jenner Fust		H. J. in litt.	
,, muralis	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117	
,, lineola	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117	
,, phæoleuca	Isle of Portland	T. Blackmore	July (e.)	T. B. in litt.	Several.
,, alpina	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117	
,, pallida	Near Bristol	A. E. Hudd	July	A. E. H. in litt.	New locality.
Platytes cerussellus	Near Lewes	G. H. Verral	June 14	G. H. V. in litt.	Abundant.
Eromene ocellea	Near Dumfries	— Lennon	Sept. 6	E. M. M. iii. 139	At light. Recorded by Dr. Hearder.
Crambus falsellus	Norwood	C. Miller	June 10	C. M. in litt.	At light.
,, dumetellus	Frensham	C. G. Barrett		C. G. B. in litt.	In rough fields.
,, Warringtonellus	Minchead	A. E. Hudd	Aug.	A. E. H. in litt.	New locality.
Homæosoma eluviella	Folkestone	E. G. Meek	July	E. G. M. in litt.	Among thistles.
Myelöis advenella	Near Bristol	A. E. Hudd	July	A. E. H. in litt.	Amongst *Clematis*.
,, ,,	Norwood	C. Miller		C. M. in litt.	Larvæ on May-bloom.
Nephopteryx roborella	W. Wickham	C. Miller	July 14	C. M. in litt.	Mothing.
,, ,,	Near Bristol	A. E. Hudd	July	A. E. H. in litt.	Common.
,, abietella	Near Bristol	G. Harding	July	A. E. H. in litt.	Beaten from fir.

Local and Scarce British Lepidoptera captured in 1866—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Halias quercana	Croydon	H. Vaughan	July	H. V. in litt,	
Sarrothripa revayana	Near York	T. J. Carrington	April 14	T. J. C. in litt.	At sallows. Hybernated.
Antithesia capræana	Darenth	E. G. Meek	April	G. E. M. in litt.	Larvæ in rolled up leaves of sallows.
„ prælongana	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117	
„ marginana	Folkestone	E. G. Meek	July	E. G. M. in litt.	
„ „	Witherslack	J. B. Hodgkinson	May 20	E. M. M. iii. 37	
„ carbonana	Haslemere	C. G. Barrett	July	C. G. B. in litt.	In rough fields.
„ „	Croydon	C. Miller	July 7	C. M. in litt.	By beating.
Peronea cristana	Bury	E. Skepper	Oct. 15	E. S. in litt.	At ivy bloom.
Tortrix cinnamomeana	Haslemere	C. G. Barrett		C. G. B. in litt.	Beaten from young oaks.
„ icterana	N. Perthshire	T Blackburn	July	E. M. M. iii. 117	
Lozotænia semialbana	Greenhythe	C. Miller	July 13	C. M. in litt.	By beating.
Oxygrapha literana	Cromehurst	C. Miller	Oct. 3	C. M. in litt.	Ditto.
Leptogramma boscana	Near Worcester	Rev. E. Horton	July (m.)	E. M. M. iii. 111	Rather freely.
„ „	Alphington	H. D'Orville	Aug.	MS.	
„ scabrana	Near Worcester	Rev. E. Horton	July (m.)	E. M. M. iii. 112	Two in company with *Boscana.*
Spilonota lariciana	Bromsgove	Rev. E. Horton	May '65	E. M. M. iii. 22	Beating from larch.
Sericoris euphorbiana	Folkestone	E. G. Meek	July	E. M. M. iii. 91	Also by Rev. E. H., at Malvern, 1861.
„ abscisana	Folkestone	H. G. Knaggs	July	H. G. K.	Among thistles.
„ herbana	Ashdown	E. Hopley		E. H. in litt.	On the Forest.
„ „	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117	
Euchromia rufana	Lancashire	J. B. Hodgkinson		E. M. M. iii. 117	Flies in sunshine.
„ purpurana	Haslemere	C. G. Barrett	July	C. G. B. in litt.	
„ flammeana	Folkestone	H. G. Knaggs	July	H. G K.	Among thistles.
Roxana arcuana	Haslemere	C. G. Barrett		C. G. B. in litt.	Over oak bushes.
Orthotænia quadrana	Darenth	E. G. Meek	May	E. G. M. in litt.	
Sciaphila alternana	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117	
„ Colquhounana	Isle of Man	C. S. Gregson	May	Entom. iii. 130.	Bred.
„ „	Isle of Man	E. Hopley		Entom. iii. 90.	Scarce.
Bactra furfurana	S. Devon	Rev. E. Horton		E. H. in litt.	At Slapton sands.
„ „	Folkestone	E. G. Meek	July	E. G. M. in litt.	Among rushes.
Phoxopteryx siculana	Witherslack	J. B. Hodgkinson	May 20	E. M. M. iii. 37	
„ subarcuana	Darenth	E. G. Meek	June	E. G. M. in litt.	

Phoxopteryx comptana	Box Hill	E. G. Meek	Aug.	E. G. M. in litt.	
,, derasana	Haslemere	C. G. Barrett	...	C. G. B. in litt.	Among *Rhamnus frangula*.
,, ,,	Darenth	E. G. Meek	June	E. G. M. in litt.	Among *Viburnum lantana*.
,, diminutana	Haslemere	C. G. Barrett	...	C. G. B. in litt.	Among *Salix*.
,, ramana	Derenth	E. G. Meek	April	E. G. M. in litt.	Ditto.
Ephippiphora nigricostana	Haslemere	C. G. Barrett	...	C. G. B. in litt.	Along hedges in afternoon.
,, tetragonana	Haslemere	C. G. Barrett	...	C. G. B. in litt.	Frequents *Bryonia*.
Coccyx ustomaculana	N. Perthshire	T. Blackburn	July	E. M. M. iii. 117	
Heusimene fimbriana	Darenth	E. G. Meek	Mar.	E. G. M. in litt.	Among oaks.
Carpocapsa splendana	Tooting	W. Rogers	Aug. 16	W. R. in litt	From acorns.
Stigmonota leguminana	Epping Forest	E. G. Meek	June	E. M. M. iii. 163	Several specimens.
,, perlepidana	Loughton	E. G. Meek	...	E. G. M. in litt.	Scarce.
,, internana	Epping	E. G. Meek	June	E. G. M. in litt.	Common. Among gorse.
,, Weirana	Epping	E. G. Meek	June	E. G. M. in litt.	A fine series.
,, trauniana	Darenth	E. G Meek	May	E. G. M. in litt.	Scarce. Locality destroyed.
,, puncticostana	Haslemere	C. G. Barrett	...	C. G. B. in litt.	Open spots in woods.
,, ,,	Epping	E. G. Meek	June	E. G. M. in litt.	A fine series.
,, germarana	Folkestone	E. G Meek	July	E. G. M. in litt.	Among rose bushes.
,, ,,	Richmond	E. Hopley	July	E. H. in litt.	In the park.
Dicrorampha sequana	Haslemere	C. G. Barrett	...	C. G. B. in litt.	In rough fields.
,, plumbagana	Folkestone	E. G. Meek	July	E. G. M. in litt.	Common.
,, simpliciana	Folkestone	E. G. Meek	July	E. G. M. in litt.	Amongst *Artemisia*.
Catoptria microgrammana	Folkestone	E. G. Meek	July	E. M. M. iii. 91.	A few specimens. Among *Ononis*.
,, Wimmerana	Gravesend	C. Miller	July 13	C. M. in litt.	Among *Artemisia campestris*.
,, citrana	Folkestone	E. G. Meek	July	E. G. M. in litt.	Common.
Xylopoda pariana	Tooting	W. Rogers	Sept. 3	W. R. in litt.	At *Arbutus*.
Lobesia Servillana	Haslemere	C. G. Barrett	...	C G, B. in litt.	Among sallow. Conspicuous on wing.
Eupœcilia nana	Darenth	E. G Meek	May	E. G. M. in litt.	Rather common.
,, ,,	Lewes	G. H. Verrell	June	G. H. V. in litt.	
,, dubitana	Near Bristol	G. Harding	Aug.	A. E. H. in litt.	Scarcer than usual.
,, albicapitana	Isle of Man	E. Hopley	...	E. H. in litt.	New locality.
,, atricapitana	Folkestone	E G. Meek	July	E. G. M. in litt.	Scarce.
,, sodaliana	Croydon	C. Miller	July 7	C. M. in litt.	Beating out of buckthorn.
,, ambiguana	Haslemere	C. G. Barrett	...	C. G. B. in litt.	Amongst *Rhamnus frangula*.
,, curvistrigana	Near Barnstaple	E. G. Meek	Aug.	E. M. M. iii. 116.	Two specimens. New locality.

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Eupœcilia notulana	Folkestone	E. G. Meek	July	E. G. M. in litt.	Scarce. Among cat-mint.
,, rupicola	Haslemere	C. G. Barrett	June	C. G. B. in litt.	In a marshy copse.
,,	Folkestone	E. G. Meek	July	E. G. M. in litt.	Among hemp agrimony.
,, ruficiliana	Witherslack	J. B. Hodgkinson	May 20	E. M. M. iii. 37	
,, subroseana	Haslemere	C. G. Barrett	My. Jue. Ag.	C. G. B. in litt.	Apparently three broods.
,, anthemidana	..	P. H. Harper	...	Verb. com.	One specimen.
Argyrolepia Baumanniana	Haslemere	C. G. Barrett	...	C. G. B. in litt.	Among young under growth.
,, ,,	Loughton	E. G. Meek	June 14—20	E. G. M. in litt.	In a marshy hollow.
,, sub-baumanniana	Darenth	E. G. Meek	May 15 to 23	E. G. M. in litt.	On a dry sandy bank.
,, dubrisana	Lewes	G. H. Verrall	June	G. H. V. in litt.	
,, ,,	S. Devon	Rev. E. Horton	...	E. H. in litt.	At Slapton Sands.
,, ,,	Haslemere	C. G. Barrett	June	C. G. B. in litt.	Also by E. G. M. at Folkestone
Cochylis dipoltana	Folkestone	E. G. Meek	July	E. G. M. in litt.	A fine series.
,, stramineana	Folkestone	E. G. Meek	July	E. G. M. in litt.	Common. Among *Centaurea.*
,, gigantana	Folkestone	E. G. Meek	July	E. G. M. in litt.	Scarce.
Pterophorus punctidactylus	Barmouth	Rev. E. Horton	...	E. H. in litt.	
,, hieracii	Delamere Forest	E. Hopley	...	E. H. in litt.	Also by Mr. Greening.
,, Lienigianus	Glan' Wootton	J. C. Dale	May 20	J. C. D. in litt.	
,, baliodactylus	Folkestone	H. G. Knaggs	July	H. G. K.	Among marjoram.

Table of Larvæ discovered and described in 1866.

Species.	Date.	Food.	By whom and where described.	Remarks.
Hepialus sylvinus ..	Full fed July 10.	In the roots of Rumex acetosa	W. Buckler, E. M. M. vol. iii. p. 136.	I was myself fortunate enough to give Mr. Buckler the treat of figuring and describing this larva.
Agrotis lunigera ..	Full fed Oct. (e.)	Grasses, Dock Dandelion, &c.	W. Buckler, in MS. for E. M. M.	Eggs obtained by Mr. T. Terry.
Acidalia fumata ..	Apparently full grown Sept. 25.	Salix? Calluna?	E. Newman, Entom. vol. iii. p. 162.	Larvæ received from Mr. E. Birchall.
„ ornata ..	Full fed July.	Thyme, will also eat mint.	Rev. J. Hellins, E. M. M. vol. iii. p. 45.	Received from the Rev. Joseph Greene.
„ contiguaria ..	Full fed about May 20.	Empetrum nigrum, will also eat Polygonum aviculare.	Rev. J. Hellins, E. M. M. vol. iii. p. 69.	Forwarded by Mr. Greening. Described subsequently by E. N. in the Entom.

Table of Larvæ—*continued.*

Species.	Date.	Food.	By whom and where described.	Remarks.
Emmelesia albulata ..	Full fed about June 30.	Rhinanthus crista-galli.	Rev. J. Hellins, E. M. M. vol. ii. p. 261.	Imperfectly described before: at any rate, the var. in question.
Larentia multistrigaria	.. ..	Galium, also on Asperula in confinement.	E. Newman, Entom. vol. iii. p. 113.	"The feet as well as the claspers generally attached, and the head prone and tucked under."

NEW BRITISH TINEINA.

By H. T. Stainton, F.L.S.

On the present occasion I have only to notice one described new species.

Nepticula centifoliella, Zeller.
Stainton, Nat. Hist. Tineina, vol. vii. p. 204, pl. x. fig. 1.

Several specimens of this species were bred, in April last, by Mr. W. C. Boyd, of Cheshunt, from larvæ collected the previous autumn. The insect is readily distinguished from the two other rose-feeding *Nepticulæ*, *Anomalella* and *Angulifasciella*—but has considerable resemblance to the sloe-feeding *Plagicolella*, and the hawthorn-feeding *Ignobilella*. "From *Plagicolella* it is distinguished by the browner (less golden-brown) base of the anterior wings, and by the fascia being less shining; from *Ignobilella*, in which the basal half of the anterior wings is rather of a pale golden-brown, the different colour of that portion of the wing is a sufficient distinction, and besides the fascia is more oblique in *Centifoliella* than in *Ignobilella*." N. H. Tin. l. c.

A *Coleophora*, captured in tolerable plenty amongst long grass near Haslemere by Mr. Barrett at the end of May, does not seem to be a described species, though some years ago Senator von Heyden gave me a specimen which seems thoroughly identical, labelled—

COLEOPHORA GRAMINICOLELLA, Heinemann.

It has a superficial resemblance with *Coleophora troglodytella*, but is larger, and has distinct scattered black scales between the veins.

I reserve a further notice of the species till next year.

BEETLES.

By Martin F. Tupper.*

Every toiler to his toil;
  Life is Work in Duty's hand,
  Art and Nature both demand
Daily labour, midnight oil:

Every workman for his work;
  Art hath many, keen of skill,—
  Nature showing whom she will
Where her inner secrets lurk:

Every scholar to his task;
  Know'st thou not thy special page
  To be conned from youth to age?
Ask that knowledge, meekly ask,——

Ask it of the Heaven above,
  Ask it of the Earth below,
  Ask thy heart and mind, and so
Follow on in faith and love.

Thou shalt thus be taught to find
  There is some good work and true
  For thy proper hand to do,
Suited to thy heart and mind.

What is ours?—Well, that depends;
  Mine, at this peculiar time
  Is, — in reason tagged with rhyme
Just to touch on what's my friend's:

---

* These lines have already appeared in the columns of a Teignmouth newspaper. They were written in compliance with a request for a few verses on Beetles, for Mr. Wollaston's Note-book.

Beetles are his special care;
Beetles, shining in the sun,
Beetles, as they crawl or run,
Beetles, beetles everywhere!

Beetles, huge as bats or birds,
Beetles, small as dust of earth,
Beetles, of Madeiran birth,
Beetles, from the Cape de Verdes.

Beetles, in Nilotic mud,
Beetles, from the bright Azores,
Beetles new, on British shores,
Beetles older than the flood!

Beetles!—does this trivial seem?—
Yet philosophers may spend
All their lives from end to end,
But shall not exhaust that theme.

God in all His works is great,
Greatest in the smallest things;
And the lowest creature brings
Homage to His Highest State.

Note these microscopic spots,
By our Wollaston defin'd,
Each a miracle of mind,
One of God's forget-me-nots!

Yea,—the meanest thing that crawls,—
Vermin be it, if men will,—
As a marvel of deep skill
Is praised in the Celestial Halls!

Then, high-hearted Wollaston,
Still work on in love and faith,
For to thee God surely saith,
Servant, good and true, well-done!

Teignmouth, October 23rd, 1866.

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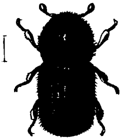

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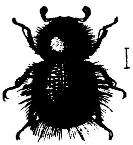

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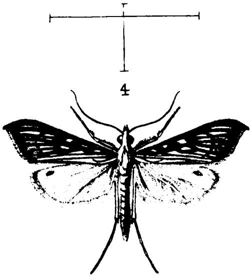

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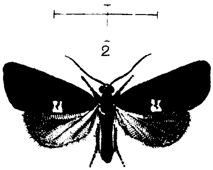

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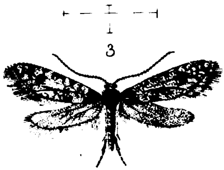

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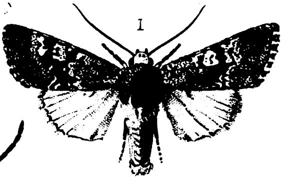

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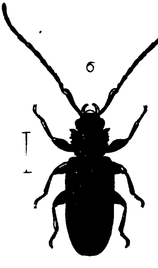

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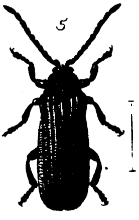

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EXPLANATION OF PLATE.

Fig. 1. *Polia nigrocincta,* Treitschke, see page 105.
2. *Halonota ravulana,* Herrich-Schäffer, see page 110.
3. *Solenobia conspurcatella,* Zeller, see page 127.
4. *Ebulea catalaunalis,* Duponchel, see page 108.
5. *Eros affinis,* ♀, Paykull, see page 68.
6. *Brontes planatus,* ♂, Linné, see page 55.
7. *Tomicus dispar,* ♀, Fabricius, see page 55.
8. *T. dispar,* ♂, see page 55.

THE flood of Coleopterous matter having this year subsided, the Annual appears more in its usual form.

The chapter in memory of the late Carl von Heyden being now completed, we shall next year devote some pages to the Entomological labours of that great American Micro-Lepidopterist, Dr. Brackenridge Clemens, by whose untimely death our favourite science has suffered a grievous loss. From him we *expected* much.

The recent visits of the American Entomologists, Messrs. Grote and Robinson, to Europe, where after leaving London they spent many weeks visiting various parts of the Continent and making the personal acquaintance of most of our leading Entomologists,—and the Entomological tour now in progress by the Russian Lepidopterist, Baron von Nolcken, including Stettin, Meseritz, Berlin, Brunswick, Hanover, London, Epping, Wiesbaden, Frankfort, Zürich, Cannes, Münich, Ratisbon, Vienna, Prague, Brieg, Breslau, Dresden, &c.,—are full of promise for Entomological science.

The contact of mind with mind, and man with man, elicits sparks of truth that otherwise might *long* be latent.

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TRICHOPTERA.

NOTES ON BRITISH TRICHOPTERA.

BY R. M'LACHLAN, F.L.S.

PERHAPS the greatest charm in the study of Entomology consists in the fact that it has no limits. We can never contemplate our collections and books, and say, "We are acquainted with all they can teach us; the work is finished; we will now, in a measure, forget our previous labours, and commence something fresh." Even he who collects for the mere purpose of amassing is never subject to the sensation that he has nothing more to do; for though the labour be more severe, still every fresh acquisition brings increased pleasure in proportion to the difficulty experienced in obtaining it. And when these considerations are applied by the more advanced student, they increase in force tenfold. New facts in systematic and faunistic Entomology, new discoveries in points of structure, new observations on habit, all tend to prove that the amount of knowledge already possessed, however great that may fondly appear to the possessor, is but one drop in the ocean that exists around. I will apply these remarks to myself and the branch of Entomology which I have made my favourite study for some years past. About two years since I finished my "*Trichoptera Britannica,*" and therein embodied all I knew at that time. But in these two years many points have been elucidated; additions have been made to our fauna, and much local information has been obtained. Still the progress has not been that which I could have wished. Other branches of the science still hold almost undisputed sway over the minds of workers, and Neuropterous insects, in a general sense, are yet very much "out in the cold." I propose, however, in these Notes to mention briefly the principal discoveries in British *Trichoptera* made since the publication of my Monograph, premising that this little paper is not to be considered as supplementary, because I intend very shortly, in another place, to publish a first supplement, which could scarcely be done here, owing to the descriptive figures and lengthy notes that must necessarily form part of it; and it is further postponed in order to enable me to complete some important synonymic additions and corrections. These Notes are thus only preliminary.

Family PHRYGANIDÆ.

Phryganea obsoleta, Hagen. Three beautiful male examples were taken in 1867 at Rannoch, Perthshire, by Mr. B. Cooke, jun., one of which is in my collection, thanks to the liberality of the captor's uncle, Mr. B. Cooke, of Manchester.

Family LIMNEPHILIDÆ.

Limnephilus nobilis, Trichop. Brit. p. 33, 5. It would appear that the individual referred to is not the true *nobilis* of Kolenati, but is rather *decipiens* of that author (Gen. et Spec. Trichop. pt. i. p. 44, 5). Mr. Wormald has been hitherto unsuccessful in his endeavour to take more specimens. Mr. Barrett took a male in the neighbourhood of Haslemere in 1867.

Limnephilus (*Chætotaulius*) *striola*, Kolenati, Gen. et Spec. Trichop. pt. 1, p. 47, 9. This interesting addition to our fauna was captured by Mr. B. Cooke at Bowdon, Cheshire, in 1866 and 1867, and I have also an example given to me by Mr. Piffard, and probably taken in the Lake District. It is of small size for the section (*Chætotaulius*) to which it belongs; scarcely exceeding *L.* (*Goniotaulius*) *vittatus*. Yet the males have the "beard" on the underside of the first apical sector of the posterior wings more strongly developed than in any other species of the section. It is a common continental insect, and the appendices are recognizably figured by Brauer in his "Neuroptera Austriaca," fig. 82. See also Aug. Meyer (Der Phryganiden Westphaliens), in the "Stettiner Entomologische Zeitung" for 1867, p. 161, for description of the larva and case; and (p. 153) for notes on the coupling of a male of *L. striola* with a female of *Anabolia nervosa*. A singular, partly gynandromorphous, example has been taken by Mr. Cooke. In this specimen the abdomen is wholly female in structure, but all the other parts of the body present characters of both sexes. Thus the right-hand maxillary palpus is 3-jointed, the left 5-jointed; the right antenna is much stronger than the left, especially in the basal joint; the right-hand anterior wing is differently marked to the left, and the first apical sector of the right posterior wing shows beneath the strongly developed "beard," which is wanting on the left-hand wing.

L. ignavus, Hagen. A ♀ was taken by Mr. B. Cooke, at Bowdon, Cheshire, in 1866.

L. sparsus, Curtis. This species is almost endlessly variable. A ♀, taken at Scarborough, in 1866, shows no trace of dark irrorations, and is almost of the uniform reddish-fuscous tint of *Anabolia nervosa*.

Anabolia cœnosa, Curtis. I have seen a ♀ from Mr. B. Cooke's collection; locality uncertain.

Halesus guttatipennis, M'Lachlan. I suspect that this may prove identical with *H. auricollis,* Pictet (= *nigricornis,* Brauer).

Apatania muliebris, M'Lachlan. I have so named the insect found in Arundel Park (Trichop. Brit. p. 74), being convinced that it is distinct from the northern *vestita.* The male yet remains unknown, notwithstanding visits to the locality at various seasons. The species is confined to a space of a few yards in extent, presenting a peculiar condition owing to a small ripple, and there the female is abundant. One is almost tempted to believe that the phœnomenon known as parthenogenesis may perhaps exist here.

Family SERICOSTOMIDÆ.

Mormonia (Helictomerus) basalis, Kolenati. *Lasiocephala taurus,* Costa (Mem. Ac. Sc. Napoli, 1857, t. ii. p. 219) is identical with this species. Hence the term *Lasiocephala* must take the place of *Helictomerus.* An additional British locality is Woolmer Forest, Hampshire, where I have taken it.

Family LEPTOCERIDÆ.

Leptocerus cinereus, Curtis. A further examination of Pictet's type of *annulata* convinces me of the identity of the latter with *cinereus.*

Setodes intaminata, M'Lachlan (Trichop. Brit. p. 117). I am now able to pair the unique female example which served as the type of this species. A male insect, taken by Mr. Pryer from off a gas-lamp at Highgate, near London, is no doubt the same species. It is not in good condition, but shows a remarkable character in the possession of tufts of long and strong hairs on the last dorsal segments of the abdomen. In size it is smaller than the male, expanding only 9‴.

Setodes reducta, M'Lachlan. *Mystacides ferruginea* or Ed. Pictet (Névroptères d'Espagne, p. 95, pl. xiii, fig. 1—6) is probably identical with this insect.

Family HYDROPSYCHIDÆ.

Hydropsyche fulvipes, Curtis. I have received from Mr. Dale both sexes of this insect taken at the same locality as were Curtis's types. I am now convinced of its distinctness from *H. angustipennis*, with which I had previously united it.

Hydropsyche ophthalmica, Rambur. I expressed a doubt (Trichop. Brit. p. 130) whether the female of this species possessed the large eyes which so abundantly distinguish the male. I can now safely aver that the female has the ordinary small eyes, having found an example of that sex with the males at the usual Thames locality. Excepting in the eyes it differs from the male only in its slightly increased size. I now think the Parisian example of this sex, previously referred to, does not belong here.

Wormaldia subnigra, M'Lachlan, occurred somewhat commonly at a little waterfall, at Scalby Beck, near Scarborough. Mr. B. Cooke has it from Rannoch and Ireland.

Cyrnus flavidus, M'Lachlan. This insect is in Mr. B. Cooke's collection, from Rannoch, and also from near Manchester. Hence the hopes I previously expressed have been realized. In a letter, received from Vienna, it has been reported from Podolia, a province of south-eastern Russia.

Family RHYACOPHILIDÆ.

Genus Beræa. The characters of this, both generic and specific, will require thorough revision and modification. The necessary drawings are all made, but I cannot here explain intelligibly in words, that which a few outline figures will represent. *B. Maurus* has been found rather abundantly at Dunkeld by Mr. Stainton; hence it may possibly prove to find a more congenial home in the northern parts of our island. The insect referred by Hagen to *Phryganea minuta* of Linné (*Silo minutus*, Kolenati), and noticed in my Monograph at page 166 (foot-note), has occurred at various localities. Mr. Eaton has erected a genus for its reception, which he terms *Bereodes* (Annals and Magazine of Natural History, June, 1867). Perhaps in so doing he is right, as it is certainly somewhat distant from the other species of *Beræa*; yet each of these present notable differences in neuration and other structural characters.

And now a few words on two species which remain as yet unique, at any rate as British. Firstly, I will speak of *Limnephilus pavidus*, Hagen (Trichop. Brit. p. 31). A male insect from the northern part of the Scandinavian peninsula, now in my collection, agrees sufficiently with the type to cause me to think it identical as a species (*vide* Stettiner Entomologische Zeitung, 1867, p. 50). Hence, supposing the specimen in the British Museum to be really of native origin, it is probable that the species should be sought for in the North of Scotland. The second species, *Stenophylax dubius* of Stephens, is, to my mind, yet doubtful as European. It presents characters which are not found in any certified European insect with which I am acquainted, but which are proper to several (mostly undescribed) North American species. Thus, while admitting its right, at present, to a place in our lists, I cannot but feel a suspicion that it may have been erroneously or accidentally introduced—time will show.

The determination of the genus, the larvæ of which form quadrangular cases (Trichop. Brit. pl. ii. fig. 34), yet remains undecided. That it contains at least two British species is rendered tolerably evident, by cases in my collection; these presenting differences in size, and in the materials employed, sufficient to cause it to appear that the two forms could not have been constructed by one and the same species.

In conclusion I will glance at local considerations. Any district, diligently worked, will no doubt produce a due share of novelties, supposing the observer to have obtained the experience which these, and all other insects, require for successful capturing. Yet two extensive portions of our kingdom merit especial attention. One of these is the north of Scotland, from Perthshire northwards, including the islands, a district which must possess many, yet undiscovered, Scandinavian forms. My own visit to Perthshire was made too early in the season to afford any adequate idea of the productions of the Highlands: July and August would be the best months. The other district is the south-west of Ireland. The insect fauna there is already known to approximate, more closely than elsewhere, to that of the Iberian peninsula, and an additional evidence exists in my own collection, in an example of a May-fly, *Baëtis flavidus* of Ed. Pictet, from Killarney. So I anticipate that when a Neuropterist shall work this locality in earnest, he will reap an abundant reward.

FOREST HILL, LONDON,
4th November, 1867.

In Memoriam.

CARL VON HEYDEN.

BORN JANUARY 20TH, 1793—DIED JANUARY 7TH, 1866.

(*Continued from the Entomologist's Annual for* 1867, *p.* 42.)

HAVING given in the previous Annual notices of the Geometrina, Pyralidina, Crambina, and Tortricina, contained in the series of articles by Carl von Heyden, published in the Stettin Entomologische Zeitung in the years 1860—1865, I now proceed to the consideration of the TINEINA enumerated in these papers; these are 72 in number, and include upwards of a dozen species not previously described. I have also included the three Plumes, treated of so as to exhaust the entire series of articles.

The figures between brackets at the end of each notice indicate the date of entry in the observer's journal.

H. T. S.

MELASINA LUGUBRIS, Hübner, Heyden (E. Z. 1863, p. 105). I found in July several full-grown and one small larva near St. Moritz, in the Upper Engadine, near the old road towards Cresta, in stony places, just where the stream descends from the Alp Laret. I have also received the case and the imago from the same locality, from Herr Knateck of Sils.

The larva which I brought home with me to Frankfort, certainly ate in captivity grass and other leaves, but soon died.

The larva resembles more that of a *Psyche*, than that of a *Talæporia*.

BLABOPHANES IMELLA, Hübner, Heyden (E. Z. 1860, p. 118). I found these larva near Frankfort, in November, in great plenty in an old felt-shoe, which was lying in a field almost covered with earth. The larva lived gregariously in closely-crowded tubes, which were externally coated with earth.

Some of the moths were developed in a few days, the remainder in the month of May following. (1826.)

TINEA FENESTRATELLA, n. sp., Heyden (E. Z. 1863, p. 342).

Alis anterioribus angustatis, flavido-griseis; in medio maculis tribus pallidis, quarum anterior subhyalina.

Exp. al. 4 lin.

Anterior wings rather shining, yellowish-grey, mixed with darker scales. In the middle of the wing is an oval, whitish, almost transparent spot, and beyond this, towards the apex of the wing, two opposite spots more indistinct, yellowish and elongate. The cilia are dark, with a blackish divisional line. On the grey underside only the transparent central spot is perceptible.

Posterior wings pale grey, with the apex and cilia rather darker.

Head clothed with reddish-brown hairs, darker on the crown. Labial palpi with drooping, narrower terminal joint, brown. Antennæ rather shorter than the anterior wings, thin, brown. Thorax and abdomen brownish. Legs yellowish; the tarsi blackish above.

It has the form of a small *Tinea imella*, Hb., with very narrow anterior wings.

I only possess one male specimen, with a very narrow abdomen, which I bred early in June from dry wood. It ran uncommonly quickly. (1843.)

TINEA GLIRIELLA, n. sp. Heyden (E. Z. 1865, p. 102).

Capillis flavo-albidis; alis anterioribus flavido-canis, maculis nigro-fuscis, margo interior late flavo-albida, vix punctata.

Exp. al. 6 lin.

This species is nearly allied to the very variable *Tinea Granella*, but is certainly distinct.

The antennæ and palpi are brownish-yellow; the terminal joint of the palpi paler. The tuft of the head is yellowish-white, generally with a darker spot in the middle. Thorax and abdomen brownish-yellow. Legs yellowish, the tarsi somewhat spotted with darker.

Anterior wings yellowish-grey, on the costal half rather mixed with brownish; at the base of the costa is a black-brown spot, but it is not, as in *Granella*, prolonged sideways below. Then almost as in *Granella*, on the costa before the middle, is a black-brown spot, a larger one in the middle rather obliquely placed, and 4 or 5 very small ones towards the apex of the wing. A paler yellowish-white space extends from the underside of the small shoulder-spot obliquely to the anal angle. It bears at the base of the wing in the middle a small, very fine, brown longitudinal line, as also a spot below the middle, and one or two before the anal angle. The darker portion is indistinctly spotted with dark towards the apex of the wing, but the broad black spot which in *Granella* stands in the middle before the hinder margin, is here entirely wanting. The cilia are grey, indistinctly spotted, and have a dark division line.

Posterior wings grey, with a reddish gloss. The underside yellowish-grey.

I have several times bred this species here from rotten wood, from the end of May to the end of June. (1858.)

TINEA ROESSLERELLA, n. sp., Heyden (E. Z. 1865, p. 102).

Capillis flavescentibus; alis anterioribus subacuminatis, fusco-nigrescentibus, fasciis duabus maculâque ante apicem obsoletis flavido-albidis.

Exp. al. 5—5¼ lin.

Tuft of the head brownish-yellow, rather darker between the antennæ; back of the head grey; antennæ two-thirds the length of the anterior wings, thin, yellowish, annulated; the basal joints dark. Labial palpi twice the length of the eyes, with recumbent scales; the second joint longer and thicker than the terminal joint, yellowish, darker at the apex and clothed with bristles, which are little shorter than the darker, pointed terminal joint, which is yellowish at the tip. The maxillary palpi are short, robust and yellowish. The thorax and abdomen are silky-grey, with some yellowish hair-like scales, especially at the sides. Anal tuft yellowish. The anterior legs are brown, the posterior pair unicolorous pale yellow.

Anterior wings long, narrow, indeed pointed, (including the not very broad cilia,) rather shining, dirty brownish-black; between the base and the middle is a broad, perpendicular, yellowish-white fascia sometimes interrupted in the middle; beyond the middle is an equally broad yellowish-white fascia, likewise sometimes interrupted in the middle, but which goes rather obliquely from the costa to the anal angle. On the costa towards the apex of the wing is a spot of the same colour. When the fasciæ are interrupted, the wings show five pale spots. The cilia are yellowish, mixed with a few dark scales, especially towards the anal angle.

Posterior wings narrow, lanceolate, pointed, silky-grey, with yellowish cilia.

On the underside all the wings are silky-grey, with the cilia unicolorous yellowish.

Tinea Roesslerella is not easily to be confused with any other of the smaller species of the genus, and comes nearest to the group of *Granella*, by its long narrow wings.

I have named this species after its discoverer, Dr. Rössler, of Wiesbaden, to whom the Lepidopterology of the fatherland is much indebted; he found five specimens in that neighbourhood in May, amongst *Silene nutans*. But I do not imagine that this is the food-plant of the larva. (1864.)

TINEA PARIETARIELLA, Bruand; *Nigripunctella*, Heyden (E. Z. 1861, p. 33), non Haworth. I found the case abundantly on the walls of the vineyards, at Rudesheim, on the Rhine, also sparingly at Mayence; always on, or at any rate near, the turf-like growing mosses, *Grimmia pulvinata* and *Barbula muralis*. It is found both in oblique and perpendicular positions. I have collected a great number of these cases, and, placing them in a cage, have furnished them with the above-named mosses, often obtained moist; but I have not observed that the larvæ fed upon them. On the other hand, they have eaten up all the refuse, with the parts of insects; hence, it is probable that they only consume animal food. They were very restless, and many crawled about almost constantly till the middle of June. I had already given up all for lost, when some moths made their appearance from the beginning to the middle of July, the pupæ protruding out of the cases as far as the ends of the wing-sheaths. In June, I visited the locality where I had found the cases, but could find none, since, doubtless, in order to undergo their transformation, they had concealed themselves amongst the stones.

That the larva does not feed on *Parietaria officinalis* is certain, as this plant does not occur in the neighbourhood.

My imago agrees quite well with Herrich-Schäffer's description and figure, but it varies much in the size of the dark spots on the anterior wings. In the living specimens the abdomen is yellow. The females I had pinned, before dying deposited eggs with much wool. (1860.)

Note (E. Z., 1865, p. 106).—The described *Tinea* is the *Parietariella* of Bruand. The *Tinea nigripunctella* of Haworth is a different species, hitherto only found in England.

TINEA ARGENTIMACULELLA, Stainton, Heyden (E. Z. 1863, p. 106). I found the larva, at the beginning of June, on walls at Jugenheim, on the Bergstrasse. It lives on mealy, grey-green lichen dust, in delicate, tubular, rounded, serpentine galleries, often an inch in length, which lie on the stones, are of the colour of the lichen, and are covered with its mealy substance. The above-mentioned lichen dust is the young form of a *Cladonia*.

In the middle of June it severs a little piece from the end of its tube, rather larger than a millet-grain, and rather pointed at one end, in order to undergo its transformation; and in this it changes to the pupa state in a rather firm paper-like cocoon.

The moth made its appearance at the end of June and beginning of July. (1862.)

TINEA VINCULELLA, H. S.; *Pagenstecherella*, Heyd

(E. Z., 1861, p. 32), Hüb.? I found the larva in its flat-lying case, from October to the beginning of June, on old walls grown over with *Byssus.* I first found it on the ruins of the castle of Heidelberg, afterwards at Königstein in the Taunus mountains. The perfect insects made their appearance at the end of June and beginning of July.

I take this species for Hübner's *Tinea Pagenstecherella*, of which the original is no longer known. According to my copy of Hübner's work, fig. 265 suits tolerably well, only the spot towards the apex of the wing does not touch the costa, but it may easily be supposed to vary to that extent, as this spot is often attenuated above, and this attenuated portion may sometimes disappear altogether. Even the pale head is represented in the figure. (1830.)

INCURVARIA PROVECTELLA, n. sp., Heyden (E. Z. 1865, p. 103).

Capillis flavo-rufescentibus; palpis elongatis, flavis; alis anterioribus lucidulis, griseo-fuscis, maculâ angulo anali trigonâ flavo-albidâ.

Exp. al. 9 lin.

Nearly related to *I. vetulella*, Zetterstedt, but rather larger and the anterior wings narrower.

The antennæ are brown, rather shorter and thicker than in that species. Palpi long, as long as the head is broad, straight, unicolorous pale yellow. Tuft of the head reddish-yellow.

Thorax and abdomen grey-brown. Anal tuft and the adjoining hairs grey. Legs grey, the spurs and tibiæ rather paler.

Anterior wings rather shining, unicolorous grey-brown; only when examined with a lens a mixture of grey scales becomes visible. At the anal angle, rather further from the apex of the wing than in *I. vetulella*, is a yellowish-white, triangular spot, attenuated above, which in one specimen reaches half across the wing, in the other only one-third. The cilia are of the same colour. The posterior wings are a little paler.

The underside is grey, with a yellowish gloss, the spot shines through faintly.

I received two ♂ specimens of this moth from Herr Dorfinger, of Sellmannsdorf, near Vienna, amongst other undetermined species from that locality. (1861.)

NEMOPHORA PILULELLA, Hb., Heyden (E. Z. 1862, p. 173). The case is of an elongate oval form, often rather broader posteriorly, with the ends sharp-pointed, slightly arched on both sides. It consists of 4 or 5 crescent-shaped pieces of brown leaves fastened together, generally taken from dry bilberry leaves. The individual pieces of leaf are usually alternately pale and dark-coloured, so that the case has thereby a rather variegated appearance.

I found a number of cases in the middle of May on the Feldberg, in the Taunus mountains in fir woods. They were always under loose stones, and under the fir trees in their vicinity were few other plants except bilberry. Several larvæ were still crawling about in their cases.

The moths appeared at the beginning of June, the half of the thin yellowish pupa skin remaining protruding from the case. (1861.)

ADELA OCHSENHEIMERELLA, Hb. Heyden (E. Z. 1862, p. 174). I found the cases at the same time and place with those of *Pilulella*. They were not distinguishable from them, but the moths appeared as early as the end of May.

I hope to be able, at a later date, to furnish a description of the larva. (1861.)

SWAMMERDAMIA APICELLA, Donovan, Heyden (E. Z. 1863, p. 107). The larva feeds at the end of June and beginning of July on sloe-bushes which are rather shaded, usually in small societies, in a rather extensive delicate web, devouring the leaves which are still young. It is lively and wriggles about much.

Under the web it changes to the pupa state in a spindle-shaped white cocoon, with two points at each end; the imago makes its appearance in the following year at the end of April and beginning of May.

Sw. apicella appears to be a local insect. Years ago I observed the larvæ on the hedges of the wilderness at Frankfort, where it has not been found of late years. On one entomological excursion, which I made with Herr Anton Schmid and Herr Mühlig in 1861, we found them tolerably plentiful in the woods at Eberstadt, near Darmstadt. (1836.)

RHINOSIA HORRIDELLA, Kuhlwein, Tr., Heyden (E. Z. 1860, p. 119). The larva lives in the middle of June on apple-trees; about Frankfort it is not abundant. It gnaws under a light web, the upper side of a leaf, which hence becomes rather curved. It forms a boat-shaped, paper-like, white cocoon, from which the imago escapes at the beginning of July. (1824.)

EXAPATE CONGELATELLA, Clerck, Heyden (E. Z. 1865, p. 104). I have bred the male and female moths from two different larvæ, which I here describe.

♂. Larva of almost equal breadth throughout, with the back arched, dull, dark green, with two whitish longitudinal lines along the back; the sides paler, and pale warts, each bearing a hair. Head rather narrower than the second segment, shining, brown, spotted with yellowish. Second segment shining, greenish, the anterior edge broadly whitish; posteriorly it bears a brown spot twice interrupted by a pale line. Anal segment of the same colour. Anterior legs black.

♀. Larva of almost equal breadth throughout, rather flattened, with a greasy shining appearance, grey-green, with very small dark warts, each bearing a pale hair; on each side of the back is a faint paler longitudinal stripe. Head nearly as broad as the second segment, shining, yellowish-brown, spotted with black. Second segment shining, grey-green, with a broad black spot and two greenish longitudinal lines. Anal segment similarly coloured. Anterior legs black.

Both larvæ changed to the pupa state in a long, rather tubular, whitish cocoon, with open holes like a sieve; the cocoon was fastened to any substance on the ground. The pupa of the ♀ had short wing-sheaths.

The larvæ are not scarce about Frankfort and Mayence at the beginning of May between united leaves on the terminal twigs of privet (*Ligustrum vulgare*). The perfect insect makes its appearance in November. (1829.)

DEPRESSARIA PROPINQUELLA, Tr. Heyden (E. Z, 1862, p. 174). The larva feeds about Frankfort at the end of June and beginning of July on the underside of the large leaves of the burdock (*Arctium lappa*), drawing with its silk a portion of the leaf into a longitudinal fold, in which it lives. I have also found it at the same time on *Serratula arvensis*; on this plant it folds a leaf upwards like a gutter.

It forms an oval, firm cocoon, mixed with earth, to undergo its change to the pupa state.

The imago appears at the end of July. (1836.)

DEPRESSARIA PARILELLA, F. R., Heyden (1861, p. 34). The larva occurs singly on *Peucedanum oreoselinum* in the woods at Mombach, near Mayence. It spins the leaves together to a rather large, diffuse ball-like web, in which it changes to pupa at the beginning of June.

The imago appears at the end of July. (1855.)

DEPRESSARIA EMERITELLA, Heyden (E. Z. 1861, p. 35). The larva occurs round Frankfort at the end of July between the united leaves of tansy (*Tanacetum vulgare*), and is very lively. It assumes the pupa state in its domicile, and the imago appears in the middle and end of August, also singly at the beginning of September. (1820.)

ENICOSTOMA LOBELLA, S. V., Heyden (E. Z. 1863, p. 343). The larva is found from the beginning to the middle of August on sloe (*Prunus spinosa*); it forms a thin white web (beneath which it lies) on the underside of the leaves, which hence are arched longitudinally. It is very lively and wriggling. It forms a firm, narrow, oval cocoon in which it changes to the pupa state.

The imago appears at the beginning of May and is abundant in this neighbourhood. (1825.)

GELECHIA FERRUGELLA, S. V., Heyden (E. Z. 1861, p. 35). I found the larvæ at the end of May in the wood at Falkenstein on the Taunus in pod-like or tubularly united leaves of *Campanula persicifolia*. It is extremely lively.

The pupa is not enclosed in a cocoon, but is fastened by some web attached to the last segment to a leaf or stem, and the imago appears in the middle of June. (1858.)

GELECHIA HIPPOPHAËLLA, Schrank, Heyden (E. Z. 1865, p. 379). I found the larvæ at Ragatz on *Hippophaë Rhamnoides* in the middle of August, 1851, and in the middle of September, 1862. The perfect insects appeared in the middle of September, and in the first half of October. (1851.)

GELECHIA PINGUINELLA, Tr., Heyden (E. Z. 1860, p. 120). The larva is in this neighbourhood very abundant in May on poplars (*Populus nigra* and *pyramidalis*) between united leaves. It changes to the pupa state in the middle of June, generally gregariously under loose bark, beneath a grey web. The perfect insect appears in the middle of July. One finds it abundantly on the trunks of the poplars, running about quickly. (1822.)

GELECHIA ACUMINATELLA, Sircom, Heyden (E. Z. 1862, p. 360) (*G. palustrella,* Heyden olim). I found the larvæ in October in meadows at Offenbach. It mines large irregular spaces along the mid-rib of the leaves of *Carduus palustris*, and changes to pupa in an oval earth-cocoon, from which the perfect insect makes its appearance at the end of April. (1840.)

GELECHIA BRAHMIELLA, n. sp., Heyden (E. Z. 1862, p. 175).

Alis anterioribus rufescenti-cinnamomeis; squamulis obscurioribus mixtis; posticis griseis; palporum articulo ultimo nigro.

Exp. al. 5½—5⅔‴. [The size in the Ent. Zeit., 2½—2⅔, is a misprint.]

Anterior wings reddish-cinnamon brown, mixed with dark scales, which are more numerous on the costa and towards the apex of the wing; there are also dark scales on the cilia. Posterior wings grey, with long cilia. Head and thorax of the colour of the anterior wings. Front of the head more unicolorous yellowish. Antennæ about as long as the body, grey with darker annulations. Palpi externally of the colour of the head, internally yellowish; the pointed terminal joint black. Abdomen yellowish-grey, with yellowish hairs at the tip. Legs yellowish; the tarsi faintly annulated with darker.

In form this species resembles *Gelechia atriplicella*, F. v. R.

The larva is rather flattened, somewhat attenuated at both ends, transversely wrinkled, clothed with some short hairs, with a greasy-shining appearance, reddish-brown. Head shining black. Second segment with a shining, black, crescent-shaped spot divided by a slender pale longitudinal line. Anterior legs darker than the body.

It mines the pinnate leaves of the *Jurinea Pollichii*, Koch, which thence become inflated lengthwise. It eats out the parenchyma from the tip of the leaf, and the excavated portion becomes dry and yellowish-brown. The excrement remains collected in the tip of the leaf.

I first found the larva at Eberstadt and Jugenheim on the Bergstrasse, in October. It winters in the mine, which it does not quit till April; then under a slight web it changes to the pupa state.

The pupa is narrow, longish-oval, shining, brown, anteriorly rounded, with prone, slightly-raised sheaths, which leave the three last segments free. The last segment is blunt, clothed with very small hairs.

The imago makes its appearance towards the end of May.

The larva also occurs at other periods of the year, and I have met with it full fed at the end of May, also at the end of July and beginning of August. Of late years I have also found it on the sand at Mombach, near Mayence, a locality in which the long-ago deceased worthy Entomologist Brahm collected industriously and I have named this new species after him. (1849.)

GELECHIA SCRIPTELLA, Hb., Heyden (E. Z. 1861, p. 36). The very active larva feeds at the beginning of October on maple (*Acer campestre*) under a lobe of the leaf turned down on the upper side; here also it assumes the pupa state. The perfect insect makes its appearance in the first half of May of the following year.

In the neighbourhood of Frankfort I found it most frequently in the hedges at Offenbach and Oberrad. (1841.)

GELECHIA DIFFINIS, Haw., *scabidella*, Z., Heyden (E. Z. 1862, p. 174) This rather lively larva is not scarce at the beginning of July on ***Rumex acetosella***, especially in the sandy places of this neighbourhood; it forms a fine tubular web on the seed-bearing stems, interwoven amongst the seeds, on which it feeds. In this abode it assumes the pupa state in a rather thicker cocoon. The imago appears at the end of July. (1836.)

Gelechia triparella, Z., Heyden (E. Z., 1860, p. 120, E. Z. 1862, p. 176). The very lively larva occurs every where in this neighbourhood in September and October, in serpentine silken galleries between oak leaves fastened one flat upon the other, of which it gnaws the cuticle. The change to the pupa state takes place in the web, and the imago is developed at the end of May or beginning of June of the following year. (1826.)

I have also found the larvæ on oaks as early as the beginning of July, but the perfect insects did not make their appearance till the middle of May of the following year.

Gelechia Rhenanella, n. sp., Heyden (E. Z. 1863, p. 343).

Alis anterioribus fusco-griseis, squamulis flavidis intermixtis, post medium fasciâ rectâ flavidâ.

Exp. al. 3½‴.

Anterior wings rather short, brown-grey with yellowish scales intermingled; beyond the middle is a straight yellow fascia, not sharply defined. At the apex of the wing before the cilia are some very small yellowish spots. Cilia dark grey. Posterior wings grey. Head, thorax and abdomen grey-brown. Antennæ brownish-yellow, with darker annulations. Palpi rather long, yellowish; beneath black. Legs grey-brown; tarsi annulated with white.

It has rather the form of *G. basaltinella*, Z., but is only as large as a small *G. stipella*, H. [*nævіferella*, Z.].

I found the larva, which I have not described, at the beginning of July, at Mombach, near Mayence, in hedges, on the lower leaves of *Convolvulus sepium*, which appeared withered at the tips or at the edges.

The perfect insect appeared the beginning of August. (1845).

GELECHIA ANTHYLLIDELLA, Hb., Heyden (E. Z. 1861, p. 36). I first found the larvæ in the middle of October, on the slopes behind Offenbach, mining the leaves of *Anthyllis vulneraria.* The mine forms a greenish-white irregular blotch on the upper side of the leaf, generally near the leaf-stalk. When the larva becomes older it draws the leaf upwards near the leaf-stalk, into a pod-like form; the smaller leaves are doubled over to the tip and then appear inflated. Some of the larvæ quit their mines before winter, whilst others pass the winter in the evergreen leaves. The larva constructs a narrow, elongate, thin, pale-grey cocoon outside the leaves, and changes in it to the pupa state in April. The imago is developed in the middle of May. Doubtless there is a second brood. I have also found the larvæ abundantly at Jugenheim in the Odenwald. (1855.)

GELECHIA BRIZELLA, Treitschke, Heyden (E. Z. 1860, p. 120). The sluggish larva is found in June and the beginning of July in the flower heads of *Statice armeria*, of which it eats the unripe seeds. One often finds several larvæ in one flower head; in this neighbourhood we find the larva whereever the plant occurs. In the larval abode it spins a slight cocoon and then assumes the pupa state; towards the end of July and in August the imago is produced.

In the autumn we find the larvæ of the second brood, from which the moths are developed in the May of the following year. (1827.)

YPSOLOPHUS SCHMIDIELLUS, Koch, Heyden (E. Z. 1865, p. 380). This occurs throughout June about Frankfort, between spun-up leaves of *Origanum vulgare* and

Mentha arvensis; between these leaves in a slight cocoon it also changes to the pupa state. The imago is developed towards the middle of July. The larva is extremely lively. (1842.)

The name *Schmidiellus* must be retained as the oldest (1848—see Isis, 1848, p. 954); *Durdhamellus*, Stainton, dates from 1849, and *Quadrinellus*, H.-S., from 1853, though this latter had been used by Fischer von Röslerstamm (as a manuscript name) much earlier.

ANCHINIA GRISESCENS, Frey, Heyden (E. Z. 1863, p. 344). I found the larva at the beginning of July, on the Alp Laret, near St. Moritz, in the Upper Engadine, between united leaves of *Daphne alpina.* The pupa, as in the allied species, sits perpendicularly on a twig. The perfect insects appear the beginning of August. (1852.)

ŒCOPHORA DEVOTELLA, n. sp., Heyden (E. Z. 1863, p. 107).

Capite, thorace, alis anterioribus luridis, ciliis fusco-nigris; alis posterioribus fusco-nigris.

Exp. al. 5½‴.

Head luteous, with the face smooth. Antennæ rather shorter than the body, brown. Palpi as long as the head, yellowish-brown, with appressed scales; the last joint of the same length as the penultimate, but narrower. Thorax and anterior wings almost lustreless, luteous; the latter with brown-black cilia. Posterior wings brown-black. The underside of the wings brown-black. Abdomen brown, mixed with paler scales at the sides. Anal tuft reddish-yellow. Legs brown; the tarsi beneath reddish-yellow.

The larva is short, thick, attenuated at both ends, lustreless, clothed with isolated short hairs, yellowish, with traces of five faint longitudinal stripes, of which the central one is the most distinct and formed of separate spots. Head short, heart-shaped, narrower than the second segment, shining black-brown, with an angulated pale line pointing backwards. The second segment is rather narrower than the third, shining, divided by a white longitudinal line, its hinder margin is brown on both sides; the anal segment is somewhat depressed. Legs annulated with dark.

The pupa is elongate-oval, thick, smooth, shining, brownish-yellow. Head blunt, projecting beneath rather like a knob. The sheaths of equal length, only with their tips rather projecting, leaving four segments free. The penultimate segment is long, attenuated posteriorly; the terminal segment small, short, heart-shaped, terminating in a point.

I found the larvæ at the end of August and beginning of September in the Höllenthal, in the Black Forest, in the umbels of *Heracleum sphondylium*, the seeds of which it spins together with a slight web. It is sluggish, and feeds on the seeds into which it bores. In the first half of September it forms a slight cocoon in its dwelling, and assumes the pupa state; the pupa is also rather sluggish.

The perfect insect makes its appearance in the second half of June in the following year.

Œcophora devotella is allied to *Flaviguttella*, F. v. R., but the last-named is generally rather larger, and besides the reddish-yellow spots on the anterior wings, their ground colour is as dark as that of the posterior wings. (1862.)

ŒCOPHORA STATARIELLA, n. sp., Heyden (E. Z. 1863, p. 108).

Antennis apicè albidis; capite et thorace fuscescentibus;

alis anterioribus luridis, maculis quatuor obsoletis dilutioribus; alis posterioribus griseo-nigris.

Exp. al. $4\frac{1}{2}'''$.

Head almost smooth, brownish; face and hinder margin more yellowish. Antennæ rather shorter than the body, dark brown; the last third whitish-grey. Palpi as long as the head, brown; at the base yellow; the last joint not narrower. Thorax grey-brown. Anterior wings dull luteous, with the cilia of the same colour, and four hardly perceptible paler spots; the first in the middle of the inner margin, the second on the disk above the anal angle.

Posterior wings grey-black. Underside of the wings blackish; the cilia of the anterior more yellowish. Abdomen above black-grey; beneath, as also the breast, silvery-grey. Anal tuft reddish. Legs brownish-grey, rather paler above; tarsi annulated with reddish.

I have only found this moth twice in the middle of July, on the Alp Laret, at St. Moritz, in the Upper Engadine. It is nearly allied to *Œcophora devotella,* but easily recognized by its much smaller size, whitish tips to the antennæ, and the four faint spots on the anterior wings. Probably in some specimens those spots come out more distinctly. (1862.)

ŒCOPHORA TRAGICELLA, n. sp., Heyden (E. Z. 1865, p. 380).

Alis anterioribus nigro-cinereis, squamulis albidis mixtis, lineolis duabus angustis, longitudinalibus, abbreviatis, obsolete nigricantibus.

Exp. al. $10'''$.

Allied to *Œc. pseudospretella,* Stainton, with which I am not personally acquainted; Herrich-Schäffer gives it as *Gelechia pseudospretella*, vol. v. p. 181, fig. 627.

Anterior wings broad, rather silky, dark-grey, mixed with paler scales, which become particularly abundant towards the apex of the wing. A faint blackish longitudinal line runs along the disk from the middle of the wing to the apex; a little before and below the middle of the wing is a short faint longitudinal line, and another still more indistinct at the base of the wing, not far from the costa. Before the cilia, which are nearly concolorous with the wings, and also mingled with darker scales, is a row of indistinct, darker spots, which here and there unite into a line. The underside is unicolorous grey. Posterior wings broad, rather pointed, little paler than the anterior wings; the veins are rather darker, the tolerably long cilia of the same colour. The colour of the underside is rather paler than the anterior wings.

Head with large, appressed, pale-grey scales, sparingly mixed with darker ones. Palpi long (about as in *Œcophora sulphurella*), recurved, narrow, grey; the base of the terminal joint as well as the fine-pointed tip yellowish-white. Antennæ $\frac{2}{3}$ the length of the anterior wings, thin, dark grey, faintly annulated with paler. Thorax dark grey, anteriorly with a narrow, darker, transverse line; the sides rather paler. Abdomen grey, clothed with large rounded scales; the terminal segment yellowish, with a broad protruding ovipositor. Legs long, grey, the darker tarsi narrowly annulated with paler.

I only found a single specimen at the end of July, on a lichen-covered fir-tree at St. Moritz, near the mineral springs. A second specimen escaped. (1851.)

ŒCOPHORA KNOCHELLA, Fab., Heyden (E. Z. 1860,

p. 121). I found the larvæ in the middle of June, in the lower wood at Frankfort, on *Cerastium semidecandrum*, amongst a large, thin web on the stem near the root. The larva changed to the pupa state in a slight thin cocoon, and the moth appeared the beginning of July. (1857.)

Œcophora Noricella, F. v. R., Heyden (E. Z. 1860, p. 121). I found the larvæ in the middle of July, on the mountains at Rippoldsau, in the Black Forest, on *Epilobium angustifolium*, of which they draw together the terminal leaves and flowers to a cluster. It changes to the pupa state in a fine, simple cocoon, and the moth is developed the beginning of August. (1856.)

Acrolepia Arnicella, n. sp., Heyden (E. Z. 1863, p. 109).

Capite, thorace, abdomineque pallidis; alis anterioribus flavescenti-albidis, fasciis incompletis, maculis atomisque lutescenti-brunneis, post medium punctulis nigris; alis posterioribus albidis, maculis marginalibus obsolete griseis.

Exp. al. 6¾‴.

Head, thorax and abdomen yellowish-white; the last joint of the palpi with two indistinct brownish rings; antennæ annulated with brown.

Anterior wings broad, yellowish-white, with scattered yellowish-brown atoms, which have a tendency to form very narrow fasciæ in the paler intervening spaces. The yellowish-brown fasciæ have often a tendency to separate into spots. In the middle is an inwardly-curved fascia, in the middle of which is a small transverse black streak. Beyond this central fascia to the apex of the wing the yellowish-brown colour is more predominating; and here on the outer margin are four still darker spots, and in the middle two or three black spots in a transverse row. The dark cilia are intersected by two paler lines, and have a pale spot in the middle.

Posterior wings whitish, towards the apex rather yellowish, with faint grey spots on the margins. Cilia white, with two darker intersecting lines, and a blackish spot at the apex of the wing.

The underside of the anterior wings is more unicolorous yellowish-grey, with alternately yellowish and blackish spots on the outer margin, and blackish cilia interrupted by the pale spot.

Underside of the posterior wings whitish. Femora, tibiæ and tarsi yellowish, annulated with darker.

The larva is rather thick, somewhat flattened, rather attenuated at each end; the segments deeply incised, each with a rather protruding small wart at the side, rather shining, smooth, yellowish-white. Head almost as broad as the second segment, heart-shaped, pale yellow, with the mouth brownish. The second segment is narrower than the following segments, of the same colour, posteriorly with a deep black, middle spot, divided by a pale longitudinal line.

The anal segment is very small, pointed posteriorly, shining, deep black. The stigmata appear as very small black spots. Anterior legs slightly spotted with dark; the very small anal prolegs with a grey spot.

The pupa is rather slender, somewhat attenuated at each end, with appressed sheaths of almost equal length, which leave the five last segments free, with slight lustre, rather smooth, yellowish-brown; the anterior end is rather abbreviated; each segment bears a small spine on the sides, a little before the middle. The last segment is rather abbreviated and emarginate, with sharp edges on each side and clothed with some bristles.

The larva mines the leaves of *Arnica montana* in the middle of May, forming long, irregular tracks. These are yellowish; with small scattered grains of dark excrement. The larva quits its mine towards the end of May, and bores beneath the epidermis on the underside of another leaf, forming an elongate oval burrow, which is scarcely perceptible from the upper side; in this it changes to the pupa state in a slight, white cocoon, not made with open meshes.

In the first half of June, the moth makes its appearance. I first found the larva in the woods at Ober-Ursel in the Taunus.

Acrolepia Arnicella, on account of its pale colour and the shorter, broader, anterior wings, is not to be confounded with *A. granitella* and *A. Solidaginis;* but is far more nearly allied to *A. cariosella.* But from this it may also be readily distinguished by the different position of the spots on the costa of the anterior wings, by the black spots on them, and by the paler, spotted posterior wings.

The figure given by Fischer von Röslerstamm of *Acrolepia granitella*, in Plate 8 of his work, represents the anterior wings so broad, and so much difference in the colouring, that it agrees with no specimens I have seen from different localities. Either the figure is incorrect, or, what is also very possible, there are still some allied species confused. A careful observation of their metamorphoses, and of the different food-plants, is, therefore, much to be desired. That of *Acrolepia cariosella* I will furnish afterwards.

The *Acrolepia cariosella* found by Frey, on the Bernina, in the Upper Engadine, I consider distinct from that species, being distinguished by the brown-yellow central fascia standing perpendicularly on the inner margin of the anterior wings. I have named it, in my collection, *Acrolepia adjectella.* (1862).

CEDESTIS GYSSELENIELLA, Kuhlw., Heyden (E. Z., 1865, p. 105). This is not scarce on fir trees (*Pinus sylvestris*) at Frankfort, in the middle of May.

The moth makes its appearance the beginning of June. (1828.)

OCNEROSTOMA PINIARIELLA, Z., *argentella*, Heyden (E. Z. 1860, p. 122). The larva feeds in April and the beginning of May, in the needles of the fir (*Pinus sylvestris*), which it eats out from the tip downwards, leaving its excrement behind it. Generally, the inner substance of one needle is sufficient for it; but if this is not the case, it enters another needle. At the spot where it leaves off feeding it makes a small hole in the needle for its exit, and then spins some fresh needles firmly and tubularly together, forming between them a thin white cocoon, in which it changes to the pupa state. The imago is developed in the middle of June, and we often find it sitting motionless on the needles.

At the beginning of August I have taken perfect insects, probably of a second brood. Although the larva sometimes occurs very plentifully about Frankfort, it is not all injurious. It feeds only on the needles of the previous year. Many years ago I distributed many specimens amongst other Entomologists, under the name of *Tinea longiventrella*. (1818.)

GRACILARIA HEMIDACTYLELLA, S. V., Heyden (E. Z. 1862, p. 360). The larva feeds at Darmstadt on *Acer platanoides* and *Pseudoplatanus*, more rarely on *Acer campestre*, at the end of August and beginning of September, in a cone formed at the edge of a leaf; when the larva is full grown this cone is fully an inch long.

Either on the upper or under surface of a leaf in a small hollow, or on some other substance, the larva forms a flat, smooth, elongate-oval, yellowish-white, transparent, paper-like cocoon, through which one can distinguish the unicolorous, greenish-white pupa.

The perfect insect appears at the end of September, as a second brood. (1841.)

Gracilaria Fidella, Reutti, Heyden (E. Z., 1862, p. 360). The larva feeds, at the end of August, on hop (*Humulus Lupulus*), at first mining a pale spot in the fork between two ribs of the leaf, afterwards beneath a piece of the edge of the leaf, turned down towards the under side, and which has more or less of a conical form. When full fed it quits this habitation, and forms on the underside of that or some neighbouring leaf an elongate-oval, paper-like, flat, shining, white cocoon, with a faint longitudinal keel. In the first half of September the imago is excluded, the pupa skin being drawn half out of the cocoon. I found the larvæ and pupæ this year, first at Freiburg in the Breisgau, on wild hops; then, a little later, at Speyer, on cultivated hops. As far back as 1856, I had noticed at Badenweiler, in the Black Forest, the empty cocoons on the hops in August; hence there must be two broods.

Reutti has well described this species, which has not been mentioned by recent authors, in his Lepidopterous Fauna of the Grand Duchy of Baden. Although Herr Reutti had sent me this species in 1851, and I had then determined it for him as a new species, I had so completely overlooked the circumstance that I had already placed the specimens, bred this year, in my collection as a new species, with the name *Gracilaria Humulella*.

It has afforded me much pleasure now to have discovered its natural history in the same locality in which Reutti captured the imago. (1861.)

GRACILARIA LIMOSELLA, Dup., Heyden (E. Z., 1862, p. 362). In company with Herr Anton Schmid and Herr Mühlig, I found the larva in the middle of September, in the wood at Mombach, near Mayence, on *Teucrium Chamædrys*. It mines the leaves, which hence appear swollen on the upper side, whilst the underside is drawn together in folds. It changes to the pupa state within the mine, and the moth appears at the end of June and beginning of July. There is an earlier brood. (1858.)

GRACILARIA PAVONIELLA, Metzner, Heyden (E. Z. 1861, p. 37). I found the larva in the middle of October, at Jugenheim, on the Bergstrasse, mining the leaves of *Aster amellus*. The mine is large, often an inch long, generally occupying the entire breadth of the leaf towards the tip; it is reddish-brown. In the middle of it, along the mid-rib, is a more or less inflated, fusiform space, on the upper surface of the leaf, with a longitudinal keel; beneath this is the usual abode of the larva. It frequents plants which grow under the shade of trees, and it is only in the larger radical leaves that we sometimes find two mines in one leaf. It only rarely happens that the mine is on one side of the mid-rib.

Before winter the larva becomes of a lemon-yellow, but does not quit its mine till March or April. In some convenient corner it spins an oval, flat, whitish, transparent cocoon. The imago appears in the middle of May. (1859.)

(E. Z. 1862, p. 176.) Frey has already described this larva in his "Tineen und Pterophoren der Schweiz;" he found it, however, on *Margarita Bellidiastrum*. Perfect insects are often described over and over again, and it is not inadvisable that several original descriptions of the earlier stages should also be extant.

Gracilaria Kollariella, Zell., Heyden (E. Z. 1862, p. 362). The larva mines the leaves of the broom (*Sarothamnus scoparius*), more rarely those of *Genista Germanica;* it is found near Frankfort on the Taunus, and in the Odenwald, in the middle of June. The mine is a large, grey-brown spot, which often covers an entire leaf. The larva quits one leaf to penetrate into another. At the end of June it quits the mine; it spins on the upper side of a leaf, which is a little curved upward lengthwise, an elongate, flat, paper-like, transparent, yellowish-white cocoon, from which the imago makes its appearance in the latter half of July.

The larvæ of a second brood are found from the middle of September to the middle of October. When young, it is more yellowish-white, and mines at first pale, finger-like tracks, which afterwards occupy the entire surface of the leaf, from which it ejects its excrement. In the middle of October it quites the mine and makes its cocoon, which it fastens to any convenient object, and winters within it. (1830, 1859.)

Ornix Pfaffenzelleri, Frey, Heyden (E. Z. 1863, p. 344). Professor H. Frey having first called my attention to it, I found the larva at St. Moritz, in the Upper Engadine, on *Cotoneaster vulgaris.* It feeds at the end of June and beginning of July within a leaf folded together upwards, devouring the upper surface of the leaf. It changes to the pupa state beneath a turned-down edge of the leaf, in a parchment-like, brownish, narrow cocoon.

The cocoons which I brought home with me to Frankfort furnished the perfect insects the beginning of August; one even made its appearance in October. I also saw some of the perfect insects on the wing early in July.

I thought I had collected a tolerable supply of this pretty species, but many of the leaves which were folded together in the same way produced only *Teras Abildgaardana.* (1862.)

COLEOPHORA CONSPICUELLA, Zell., Heyden (E. Z. 1863, p. 345). The larva, which is full fed in the middle of July, occurs locally at Frankfort and Darmstadt, on *Centaurea Scabiosa.* Before it fixes itself for its change to the pupa state, it often crawls about for a long while, and far away from its food plant.

The perfect insect generally makes its appearance in the first half of August; though one may still find feeding larvæ singly at that time. (1842.)

COSMOPTERYX ZIEGLERELLA, Hb., Heyden (E. Z. 1860, p. 122). The larva mines the leaves of the hop (*Humulus Lupulus*), from the end of July to the middle of August. The mines are mostly linear, but divided into several branches, and are pale brown. They always run along the ribs on the upper side of the leaves, and are internally carpeted with white silk. The larva sometimes quits its mine, and enters the leaf at another spot.

The larva passes the winter outside the mine, in a flat, narrow, thin, white cocoon, and changes in the following spring to the pupa state, and the imago makes its appearance the beginning of June. At Frankfort it only occurs in isolated localities, but is there very abundant.

According to its habits it is never likely to become injurious, even should it become abundant in hop gardens. Here I have only met with it on wild hops. (1840.)

LAVERNA RASCHKIELLA, Zell., Heyden (E. Z. 1862, p. 364). The larva occurs from the middle of June to the beginning of July, and then again from the middle of September to the middle of October, mining the leaves of *Epilobium angustifolium.* When young the mine is narrow, more or less serpentine, but afterwards becomes broader, often occupying the entire half of the leaf. The full-fed larva quits the mine, and spins a rather flat, oval, paper-like, yellowish-white cocoon, which is sometimes furnished with a longitudinal keel, and therein assumes the pupa state. The imago is developed in May and early in June, and the second brood at the end of July and beginning of August. (1837.)

I have bred this species from larvæ from the Frankfort wood, from the Taunus mountains, from Auerbach in the Odenwald, from Rippoldsau in the Black Forest, and from the neighbourhood of Mayence.

LAVERNA PHRAGMITELLA, Stainton, Heyden (E. Z. 1863, p. 111). During an excursion made by several Entomologists to the peat-trenches at Pfungstadt on the 30th of March, 1862, Lieutenant Saalmüller found the larva of this species (not previously detected in Germany) in the last year's heads of *Typha latifolia.* They live gregariously in multitudes in the wool amongst the seeds, with no peculiar web, and appeared then to be requiring no more nourishment. They were very sluggish, and let themselves drop by a thread.

In May the larva spins among the seed-wool a narrow, elongate, thin, white cocoon, in which it assumes the pupa state. In April I had found in the same peat-trenches some larvæ, which had eaten their way into the dry *Typha* stems. Before spinning up, the larva crawls about in a very restless manner.

The perfect insects come out all through the month of June. They sit with the wings flat and narrow, but slightly roof-shaped. When disturbed they often slip about with their backs downwards, without flying. (1862.)

LAVERNA DECORELLA, Steph., *Mompha divisella*, Heyden (E. Z. 1861, p. 37, 1862, p. 362). The larva lives in a more or less rounded, gall-like swelling, sometimes as large as a pea, on the stem of *Epilobium alpinum*, generally at the base of the leaf-stalk. One often finds several galls on one stem. It changes to the pupa state in an elongate, parchment-like whitish cocoon, within the very confined space of the gall; from the upperside of the gall a portion of the cocoon projects tubularly through a small hole, through which the perfect insect makes its escape. A gall found in the middle of October on the Bergstrasse at Auerbach, produced a moth the day following. It is probably double-brooded, and may also occur near Frankfort and on the Taunus mountains. (1860.)

At the beginning of August I found the larva and several pupæ in the former locality on the Bergstrasse at Auerbach. The moths appeared from the middle to the end of August. It would seem, therefore, that in this species the time of appearance differs.

I have also found empty galls in the Frankfort woods and on the Taunus; and the larvæ at Badenweiler in the Black Forest. (1861.)

CHRYSOCLISTA SCHRANKELLA, Hb., Heyden (E. Z, 1863, p. 345). I found the larva at the end of July at Rippoldsau in the Black Forest on *Epilobium parviflorum*, in the leaves of which it mines great blotches. I only found it once, by the side of a water-course, but there were many mines on one plant. It spins up on the underside of the leaves in a flat, elongate, thick, white cocoon.

The moth makes its appearance in the first half of August, leaving the pupa skin inside the cocoon. (1856.)

STAGMATOPHORA POMPOSELLA, Zeller, Heyden (E. Z. 1865, p. 381). The larva may be found as early as the beginning of May, mining yellowish blotches in the leaves of *Gnaphalium arenarium*, at the same time as *Bucculatrix Gnaphaliella*. This last spins an elongate white cocoon ontside the mine, and therein undergoes its change to the pupa state. *Stagmatophora pomposella* changes to the pupa within the mine, in which the pupa skin also remains behind; whereas in *Bucculatrix Gnaphaliella* the pupa projects from the cocoon.

The imago makes its appearance at the end of June and beginning of July. (1834.)

STEPHENSIA BRUNNICHIELLA, L., Heyden (E. Z. 1862, p. 363). The larva mines the leaves of *Clinopodium vulgare* at the beginning of July. The mine begins at the tip of the leaf and often extends as far as the middle. The mined portion of the leaf has a brown, crumpled appearance. When full fed it quits the mine, and draws down a small portion of the edge of a neighbouring leaf, making therewith a small fold, under which it assumes the pupa state in a small, paper-like, whitish cocoon.

The perfect insect appears at the end of July and beginning of August. (1861.)

As far back as 1826 I found the larvæ of the autumn brood in this vicinity, but no moths were reared from them the following spring.

ELACHISTA POÆ, Douglas, Heyden (E. Z. 1861, p. 38). The larva is full fed at the end of March and beginning of April; it mines the leaves of *Glyceria spectabilis*. The long mine, sometimes of a reddish colour, is not easily perceived in the red-brown leaves. The larva quits its mine and assumes the pupa state under as light, white web between the longitudinal groove of the leaf, which is thereby rather more drawn together.

In the neighbourhood of Frankfort this species is local, and the imago makes its appearance in the latter half of April. (1860.)

TISCHERIA GAUNACELLA, F. v. R., Heyden (E. Z. 1865, p. 105). In the latter half of June the larva occurs at Frankfort and Mayence in the leaves of plum-trees (*Prunus domestica*). The mine forms a long blotch on the upperside, generally at the edge of the leaf. When the larva is more nearly full fed, the edge of the leaf is drawn over on the upper side. It changes to the pupa state within the mine, and the moth makes its appearance in July. A second brood occurs in September and October, producing moths in the May of the following year. (1835.)

TISCHERIA DODONÆA, Stainton, Heyden (E. Z. 1862, p. 364). The larva mines brown blotches, which have eccentric darker rings, in the leaves of oaks at Frankfort and on the Taunus in September: the entire mine is of irregular form and about half an inch across. The larva winters in a whitish cocoon in the lenticular portion of the mine. Sometimes the so different-looking mines of *Complanella* and *Dodonæa* occur in the same leaf. The imago makes its appearance in the first half of May.

Although I have been unable to find any satisfactory character to distinguish the perfect insect from *T. complanella*, there can be no doubt that it is really a distinct species. *Dodonæa* is always smaller than the average size of *Complanella*, though individual specimens of the latter may be found just as small.

I have for many years distributed this species amongst Entomologists under the name of *T. Frausella*, and it is also mentioned under that name in the Entomologist's Weekly Intelligencer for 1858, vol. iv. p. 175. (1846.)

LYONETIA FRIGIDARIELLA, Heyden (E. Z. 1861, p. 38). I found the larva at the end of July on smooth leaved willows by the Lake of St. Moritz in the Upper Engadine; it mines large, long, brown blotches in the leaves.

When full fed it spins on the underside of a leaf a cocoon similar to that of *Cemiostoma scitella*, but larger, which it places along the mid-rib, and the tip and base of the leaf are slightly drawn towards each other. The elongate pupal cocoon has a large four-lobed covering, which is not so thick, and therefore more transparent than in *C. scitella*. The perfect insect makes its appearance the beginning of August.

As the pupa state is not passed in a hammock as in *Lyonetia prunifoliella* and *L. Clerckella*, but as in *Cemiostoma scitella*, *Laburnella*, and *Susinella*, beneath a quadripartite covering, future more accurate investigation must decide, whether the moth truly belongs to the genus *Lyonetia*. (1852.)

CEMIOSTOMA SUSINELLA, H. S., Heyden (E. Z. 1860, p. 123). The larva lives gregariously in July and August, mining large brown irregular blotches in the leaves of the aspen (*Populus tremula*). It is abundant in the woods about Frankfort and in the Taunus. More rarely it occurs in the leaves of *Populus Italica*, on which I have found it at Mombach.

When full fed it quits the mine and spins a white cocoon, with a quadripartite covering like that of *C. Laburnella.*

The imago makes its appearance in the May of the following year. (1825.)

CEMIOSTOMA WAILESELLA, Stainton, Heyden (E. Z. 1863, p. 346). The larva mines the leaves of *Genista tinctoria* from the middle of June to the beginning of July. The mine is at first a small, round, brown spot, from which issues a fine linear track, along which the larva, still very small, proceeds to make a large mine, at first also round, but afterwards occupying the entire tip of the leaf, and often, indeed, covering the whole leaf. The black-brown excrement lies in this mine in great plenty, and forms indistinct concentric circles. If the larva finds a sufficiency of food in the leaf, it only eats the upper half of the parenchyma, so that the underside of the leaf remains green. Between two leaves, or between other objects, the larva spins a small, white, boat-shaped cocoon, with a large four-lobed covering, as in several allied species.

The imago appears the beginning of July. (1855.)

CEMIOSTOMA LUSTRATELLA, H. S., Heyden (E. Z. 1860, p. 124). The larva feeds from the middle of September to the middle of October, in the leaves of *Hypericum montanum*, more rarely in those of *H. perforatum*, where frequently several individuals from a common blotch take radiating mines towards the edges of the leaf. Towards the end of October the larva makes in its abode a small flat white cocoon, pointed at both ends. Only very rarely is the cocoon made on the outside of the leaf.

At the beginning of May of the following year the moth makes its appearance, tearing a small slit in the epidermis of the leaf, but the pupa skin remains entirely within the cocoon. The moth is sluggish, has a large body in proportion to the size of the wings, and flies little.

The species appears to be very local, and I have only found it in isolated spots in the Frankfort wood. (1830.)

Subsequently I have also found the first brood of this insect, of which the larvæ appear in the middle of June, and the imago in the first half of July. In this summer brood it very frequently happens that the larvæ spin their coçoons outside the mine. It is very curious that this insect has almost the same mode of life as *Nepticula Septembrella*, which is likewise a miner of *Hypericum* leaves.

In the case of *Cemiostoma scitella*, we have also two broods in Germany, whereas in England there is only one. I first found the larvæ of this very common species in June and July, the moths coming out in July and August. The larvæ of the second brood appear from the end of September to the middle of October, and the imago in the May of the following year.

The doubt still entertained by Stainton whether the species described by Göze in the Naturforscher, Stück 5, p. 62, is identical with *Scitella*, is hence, in conjunction with the unmistakeable figure, Pl. II. figs. 11—15, entirely dispelled.

Bucculatrix cidarella, Zeller, Heyden (E. Z. 1862, p. 365). The larva is found sparingly around Frankfort at the beginning of October, on the outside of alder leaves, on the underside of which it gnaws isolated blotches.

It changes to the pupa state in a caraway-seed shaped white cocoon, with three raised longitudinal lines, and the imago is developed in the middle of June of the year following, when the half of the brown pupa is protruded from the cocoon. (1846.)

Bucculatrix fatigatella, n. sp., Heyden (E. Z. 1863, p. 112; E. Z. 1865, p. 106).

Grisea, alis anterioribus maculis 4 suboppositis albidis; inter maculas suturales, maculâ nigricante.

Exp. al. 3⅘‴.

Antennæ and eye-caps dark grey. Head grey, with the tuft almost black; face shining, silvery-grey. Anterior wings coarsely scaled, lustreless, grey, mixed with darker scales; on the costa are two whitish spots, not sharply defined. On the inner margin are likewise two whitish spots, obliquely opposite to the costal spots; the anterior of these is rather prolonged along the inner margin. Between these last two spots is a small blackish spot composed of raised scales. Towards the apex of the wing is a small whitish spot, divided by blackish scales, which goes obliquely towards the inner margin. The posterior wings and all the cilia are grey. Thorax, abdomen and legs shining grey.

Size of *Bucculatrix Frangulella*, but the anterior wings narrower and of more even width.

I found this species several times on the Alp Giop, at

St. Moritz, in the Upper Engadine, on larch (*Pinus larix*); but on account of the stormy weather was only able to secure three specimens. *Alnus viridis* grew near the spot, and may perhaps be the food plant of the larva. (1862.)

In the middle of July, 1863, I found on the Bernina, under stones, the white, three-ribbed cocoons of this species; they were by no means scarce, but were nearly all empty. Only three of them furnished me with the perfect insect, which varies in that the white spots of the anterior wings are more or less obsolete. In the vicinity of these cocoons grew only *Chrysanthemum alpinum*; hence this is doubtless the food of the larva.

BUCCULATRIX MARITIMA, Stainton, Heyden (E. Z. 1861, p. 39). During the Annual Meeting of the Oberhessischen Gesellschaft für Natur- und Heilkunde, at Salzhausen on the 2nd of July, 1859, I discovered by the graduation-house of the salt-works, on *Aster tripolium*, the larva of this species, which had previously only been found on the sea-coast of England.

The larva has quite the habits of the allied species. When young, it mines the leaves, in narrow, expanding, slightly curved galleries; a darker excremental line is perceptible in the centre of the track. It casts its skin outside the mine, for which purpose it spins an oval, flat, thin, white cocoonet, which it afterwards quits through a small hole. It afterwards feeds externally on the under surface of the leaves, and gnaws elongate spots in the substance of the leaf, so that only the upper epidermis remains untouched.

On the same spot or on the stem the larva constructs a caraway-seed shaped white cocoon, with five more or less stout longitudinal ribs. At its two ends a thinner, flatter continuation is perceptible. The larvæ changed to the pupa state the beginning of July, and the moths appeared the beginning of August. Doubtless there is a second brood, which, however, I could not observe. The moths vary much in the sharpness of the markings on the anterior wings, and specimens that are almost of an unicolorous yellowish, or are very faintly marked, are the most plentiful. (1859.)

BUCCULATRIX BOYERELLA, Dup., Heyden (E. Z. 1863, p. 112). This larva in its entire appearance is rather different from those of other species of the genus. It gnaws the leaves of the elm at the end of August, and, like the allied species, moults beneath a flat cocoonet. To undergo its change to the pupa state, it constructs, beneath a rather flat, thin, oval, yellowish-grey silken covering, its grey, slightly ribbed, caraway-seed shaped cocoon. The perfect insect appears in the following summer. Around Frankfort, and subsequently also found at Mayence. (1841.)

NEPTICULA FRAGARIELLA, n. sp., Heyden (E. Z. 1862, p. 365).

Capillis nigro-fuscis; conchula flavescens; alis anterioribus elongatis, angustis, nitidis, nigris, basin versus cupreis, fasciâ post medium aureo-argenteâ, nitidissimâ; tarsis griseis.

Varietas; capillis anticis rufis.

Exp. al. 2½—2⅔'''.

Tuft of the head narrow, rather smooth, black-brown. Palpi with long hairs, brownish-yellow, at the sides black. Eye-caps large, yellowish. Antennæ black, with the tips rather paler.

Anterior wings long, narrow, with fine scales, shining black, with some coppery lustre; the base for one-third of the length of the wing is bright coppery-red, with the inner margin rather black; beyond the middle in the black ground colour is a very shining, silvery-golden fascia, which, on account of the narrowness of the wings, is nearly as broad as long, and forms therefore a nearly quadrate spot, a little attenuated posteriorly. The black space which precedes the fascia is nearly as broad as it. The cilia broad, grey. Posterior wings and their cilia grey.

Thorax coppery-red. Abdomen black with a metallic gloss and the anal tuft reddish. Tarsi clothed with grey hairs.

The colour of the head is alike in both sexes; but amongst them I bred one small female specimen, in which the front part of the tuft is ferruginous.

This species is distinguished from all with which I am acquainted, by the extraordinarily long and narrow anterior wings.

The larva is shining, unicolorous, brownish-yellow, with the head and second segment more shining and rather darker; on the head we see, as in the allied species, two diverging darker lines, and the mouth is also darker.

I found the larva at the end of October, on the Bergstrasse at Jugenheim, on hill slopes, on wild plants of *Fragaria vesca* growing in the shade. But I fancy I also have seen the mines of this species at Frankfort and in the Black Forest.

The mines are very long, many times twisted here and there; they begin very fine, and then for a considerable distance retain the same width; they are yellowish-grey, with a darker excremental track in the middle. Sometimes two or three larvæ mine in the same leaf, and then the mines form a dense tangle.

The cocoon is oval, rather flat, pale brown. It is often attached by the larva to the underside of the leaf.

I bred the imago in the warm room as early as the end of March. (1861.)

NEPTICULA AGRIMONIÆ, Frey, Heyden (E. Z. 1861, p. 41). The larva is found in October, and as late as the beginning of November, in the individual pinnate leaflets of *Agrimonia Eupatoria*, in which it mines long, tortuous, rather broad brown galleries, which often expand to a large blotch, and sometimes occupy the entire leaflet, especially if it be tenanted simultaneously by two or three larvæ. It does not quit the mine, but makes within it, generally in one of the serratures of the leaf, a flat, oval, yellowish-white or brownish cocoon. It is very abundant in shady woods at Frankfort and Offenbach.

The moth makes its appearance at the end of May. (1858.)

NEPTICULA FREYELLA, Heyden (E. Z. 1862, p. 366). The larva mines the leaves of *Convolvulus Sepium*, more rarely those of *Convolvulus arvense*. The mine begins very narrow, and generally twists about backwards and forwards, so as to form a small blotch. The track is of a brownish-yellow, and a fine reddish-brown excremental line runs along the middle. The larva within the mine appears rather dark brown. The cocoon is oval, flat, brownish-yellow.

The larva is found in the second half of August, and stragglers up to the middle of September. The perfect insect appears at the end of May and beginning of June.

I have also found empty mines in July, so that it is certainly double-brooded.

Nepticula Freyella appears to be a local species; I first found the larva, in company with Professor Frey, in September, 1856, at Seckbach, near Frankfort. Afterwards I found it in other localities in this neighbourhood, and rather plentifully at Soden.

This insect was first described by me in the Entomologist's

Weekly Intelligencer for 1858 (vol. iv.), p. 175; it is therefore by error that it appears in Staudinger and Wocke's Catalogue of European Lepidoptera as *Freyella,* Stainton. I have named this species after my worthy friend, Heinrich Frey, Professor at Zürich. (1857.)

NEPTICULA ÆNEOFASCIATA, Frey, Heyden (E. Z. 1861, p. 39). I found the larva in the middle of October in the woods beyond Offenbach, mining in the leaves of *Agrimonia Eupatoria,* along with *Nepticula Agrimoniæ,* Frey. But it does not change like that species within the leaf, but quits the mine, and spins a rather flat, oval, reddish-brown cocoon. The mine forms an irregular, large yellowish blotch. The moth makes its appearance the beginning of May. (1859.)

NEPTICULA ARGENTIPEDELLA, Zeller, Heyden (E. Z. 1861, p. 41). The larva mines the leaves of the birch in October and the beginning of November, forming a more or less rounded black-brown blotch, with paler edges. The central portion, filled up with the excrement of the larva, serves for its abode, and the pale margins are the places where it feeds on the parenchyma. Sometimes we find a number of these blotch-mines in one leaf.

The larva quits its mine when full fed, and spins its cocoon in some convenient spot; sometimes we find many cocoons close together. The cocoon is oval, slightly arched, scalloped, pale brown.

The imago appears at the end of May, and I have not observed a second brood. I have often found the mines in countless numbers. I have met with it around Frankfort, at Wiesbaden, in the Taunus mountains, &c. (1857.)

NEPTICULA BIS-TRIMACULELLA, n. sp., Heyden (E. Z. 1861, p. 40).

Capillis nigro-fuscis; conchula nivea; alis anterioribus nigris, maculâ parvâ basali, maculisque duabus suboppositis pone medium albis, ciliis albis; tarsis rufescentibus.

This species is nearly allied to *Nep. subbimaculella*, Haworth, and of the same size. The tuft of the head is brown-black; the lower part of the face reddish. The antennæ are brown-black, with the eye-cap and following joint white, and the tips whitish.

Anterior wings black, with a small white basal spot, and two larger opposite spots, of which the costal spot is before the middle, and the dorsal spot in the middle; cilia of the apex of the wing white. Posterior wings grey.

Thorax and abdomen blackish, with some paler scales intermingled. Anal tuft reddish. Legs brownish, the tarsal joints reddish.

This is easily distinguished from *Nepticula subbimaculella* by the colour of the tuft of the head, and by the antennæ, and by the finer scaling and purer blacker colour of the anterior wings. *N. subbimaculella* has, especially towards the apex of the wing, many paler rather metallic scales mingled with the brown-black ground, and dark scales extend further into the white cilia at the apex of the wing.

The description of the larva I will furnish afterwards. The cocoon is oval, slightly curved, anteriorly rounded, reddish.

The larva mines a very similar blotch to that of *Nepticula subbimaculella*, but in the leaves of the birch. I found it the beginning of October at Hofheim in the Taunus 1868.

mountains, and the moth made its appearance at the end of May. (1859.)

Nepticula argyropeza, Zell., Heyden (E. Z. 1861, p. 40). The larva occurs in great numbers mining the leaves of the *white* poplar (*Populus alba*). The mine forms an elongate brownish-yellow blotch at the base of the leaf, close to the foot stalk, between two ribs. Most frequently two mines are found in a leaf, one on each side of the midrib. I have never found the mine in any other part of the leaf.

I first discovered the larva at Wiesbaden in the middle of October, 1858, but out of a large number which I collected, not a single specimen attained the pupa state. Last year I collected the larvæ here at Frankfort at the end of October in the already fallen leaves. In the first half of November the larvæ quit the leaves, and spin their cocoons; these are oval, rather arched above, scalloped, of a reddish-brown, more rarely of a yellowish-brown.

The perfect insect made its appearance in the room from the beginning to the end of March, and still continued to appear in April, when I likewise met with it out of doors. (1858.)

[In a subsequent note, E. Z. 1865, p. 106, Senator von Heyden remarked that the above-mentioned species is not *Argyropeza*, Zeller, but *Sericopeza*, Zeller. This is clearly an error, *Sericopeza* being a maple feeder. The poplar-feeding species of the genus *Nepticula* have been worked out with some care by Professor Fritzsche, of Freiberg, in Saxony, but unfortunately his observations have not yet been published.]

Nepticula apicella, Stainton, Heyden (E. Z. 1865,

p. 381). I found the larvæ in the middle of October near the house of the head-forester at Frankfort, mining in the leaves of *Populus tremula.* The mine forms an elongate, black-brown blotch from the leaf-stalk between the edge of the leaf and the first side rib, or between the first side rib and the midrib; it widens anteriorly, and is sometimes five lines long. There is often a mine on each side of the midrib.

The moth deposits its egg at the end of the leaf-stalk, in which the larva mines till the end of September or beginning of October, and then passes into the leaf. This portion of the leaf-stalk is flattened sideways, but tolerably thick. The cocoon is oval, arched above, rather shining, brown.

The moth made its appearance in the room at the end of April. (1860.)

PTEROPHORUS MICRODACTYLUS, Hb., Heyden (E. Z. 1860, p. 125). The larva feeds in autumn in the stems o *Eupatorium cannabinum,* winters there, and the perfect insect makes its appearance at the beginning of May, escaping through a small round hole in the stem.

This occurs in all localities round Frankfort, where its food-plant grows. (1826.)

PTEROPHORUS XANTHODACTYLUS, Tr., Heyden (E. Z. 1860, p. 125). I found the larvæ in great plenty in light fir woods on the sandy plain at Jugenheim in the Odenwald on the *Jurinea Pollichii,* Koch, at the end of July and beginning of August. The larva is very sluggish, and readily lets itself fall from its food plant to the earth, where it curves itself together. It lives on the underside of the leaves, feeding on the parenchyma, and leaving the upper epidermis untouched. When the larva is feeding, it loosens the white down from the underside of the leaf in an uninterrupted strip, and shoves it in little rolls beneath its body. These rolls of down then remain hanging to the underside of the leaf, and give it a peculiar appearance as though banded transversely. It assumes the pupa state horizontally on the food plant, and the larval skin hangs as a white lump to the tail end.

The perfect insect makes its appearance the middle of August, yet I found it sparingly at the same time as the larvæ, when it sat gregariously on the flower of the plant, or on some neighbouring plants of *Scabiosa.*

The *Jurinea* grows very abundantly on the Mombach Sands near Mayence, but I have never found the Plume there. (1858.)

ALUCITA DODECADACTYLA, Hb., Heyden (E. Z. 1861 p. 42). The larva has a very peculiar mode of life. It occurs at Bingen on the Rhine at the end of June and beginning of July in swellings on the last year's twigs of honeysuckle (*Lonicera xylosteum*); to this my attention was first called by Herr Karl Wagner. These swellings are not thick, and often scarcely perceptible, and are from one to two inches long. The larva feeds on the pith of the twig. At the beginning of July it quits its domicile through a small hole, and spins a flat transparent net-work cocoon on the ground amongst old leaves, or on stones, &c., and changes therein to the pupa state; the perfect insect appearing the beginning of August.

Having now concluded this monument to the memory of my late lamented friend, whose acquaintance I first made in 1855, whom I subsequently met in 1857, 1859, 1861, 1862, 1863, and 1865; and with whom I have repeatedly made Entomological excursions to Mombach, to Königstein and Falkenstein, to Eberstadt, &c., I feel that I must say a few words to endeavour to convey to those, who had not the pleasure of the personal acquaintance of Senator von Heyden, some idea of his extreme kindness.

If he thought you were interested in any subject he spared no trouble to supply you with information. His sharp observant eye was very quick to detect indications of unknown larvæ, and every discovery he made at once became public property. It was interesting also to observe how his face brightened up with pleasure at the discoveries made by others. A more thoroughly genial unselfish person I never met.

In many respects he put me in mind of the late Professor Henslow, and this statement may enable many who knew that amiable botanist to form some conception of the loss which the Frankfort Entomologists felt when Senator von Heyden was taken from them.

H. T. STAINTON,

MOUNTSFIELD, LEWISHAM,
November 1, 1867.

COLEOPTERA.

NEW BRITISH SPECIES, CORRECTIONS OF NOMENCLATURE, ETC., NOTICED SINCE THE PUBLICATION OF THE ENTOMOLOGIST'S ANNUAL, 1867.

BY E. C. RYE.

THE small number of pages that I shall require on the present occasion will, I trust, atone for the inordinate space unavoidably occupied by my lengthy paper in the last "Annual;" the captures and determinations recorded in which could not be accepted as anything short of miraculous for the work of one year, considering our limited number of Coleopterists. After such a storm it was not be expected but that a lull should come; and the lull is, in this instance, as deep in proportion as its predecessor was violent. It must not, however, be supposed that the few species now to be recorded comprise the entire work of the year; as I know of several novelties taken, but not yet satisfactorily determined. Moreover, circumstances have prevented some of us from devoting so much time as heretofore to our favourite study; and the weather has on very many occasions been so bad as to damp the ardour of most collectors.

Nevertheless, my list, though exceedingly short, will be seen to contain some few fine insects; e. g., a *Lycus* (as I suppose *Eros* or *Dictyopterus* will always be called in conversation by us) new to Britain; another of the same genus, which, if distinct from the species just mentioned, is probably new to science; a *Synchita* new to us, and a genus (*Diplocœlus*) new to our lists. To these must be added the establishment of *Brontes* as a genuine British species, through its capture (with larva and var. *pallida*) by myself, under bark of a standing tree near Putney, far from any houses; and the capture of both sexes of the very rare *Tomicus dispar* in the New Forest by Charles Turner. Doubts have frequently been expressed as to the right of this species to be considered indigenous; but Mr. Waterhouse has long had one of the Xyloteriform female in his Cabinet, obtained from the late Rev. H. Clark; and there is another old specimen, of the same sex, in the collection of Earl de Grey.

We have no record, as of late years, of novelties from Rannoch; the only visit to that locality during this year, by Mr. T. Blackburn, having resulted in comparatively 'nil,' as regards *Coleoptera*, owing to stress of weather, unwonted and unpleasing attentions of gamekeepers and others, &c. I may here remark that Mr. Blackburn (Ent. M. Mag. iv, p. 17) has recorded the capture by himself last year, at Rannoch, of the insect brought forward by Mr. G. R. Crotch as *Cis punctulatus*, Gyll., with some doubt, and no locality; I, also, have a specimen, taken by myself at Rannoch, and which I am inclined to refer to that species.

The north has, however, again furnished many good things; Dr. Sharp having taken near Loch Ken both sexes of the hitherto (with us) unique *Bryaxis Lefebvrii* and many *Cryptohypnus maritimus* (found also in Morayshire by Mr. Hislop); and, near Dumfries, several of a *Scopæus* which he refers with doubt to *S. Erichsonii*, at the same time remarking that Mr. Crotch states it to be identical with the *S. lævigatus* of our Catalogues (not of our Cabinets, as it was in none of them but that of Mr. Wollaston),—many *Blemus areolatus*, *Phædon concinnum*, and other good things, including *Cryptocephalus sex-punctatus* and *Ceuthorhynchidius Dawsoni*, Bris., both unexpected boreal visitors. Dr. Sharp also informs me that he has undoubted larvæ of *Carida flexuosa*, which he hopes to rear.

Mr. Lennon has recorded the occurrence of the usually deemed southerner, *Lebia crux-minor*, in the same locality; and, with Messrs. Sharp and M'Nab, has also taken *Omosita depressa* (found near Burton-on-Trent by Mr. Harris), *Silpha dispar*, and *Erirhinus æthiops* at Dumfries. This latter insect will probably soon be seen commonly in collections; as, in addition to the above locality, Mr. Crotch took several specimens last year at Pitlochrie, and I found it among some beetles sent to me for names from Paisley by Mr. Morris Young.

Mr. Hislop chronicles the capture in Morayshire of *Thalycra*, *Melolontha hippocastani*, *Anobium nigrinum*, *Blaps mortisaga* and *Leistus montanus*.

Coming further south, my friend Mr. T. J. Bold has found the true *Sitones linëellus* (also taken by Mr. Hislop) and *S. meliloti* in considerable numbers near Newcastle; and Mr. Roberts records *Miscodera* in profusion at Llangollen, in June.

From the Midland counties, we read of some fresh specimens of *Oxythyrea*, found by Mr. J. Hardy crawling in a garden at one of the Manchester suburbs; and several of *Abdera 4-fasciata* taken by Mr. Edleston near Bowdon. *Conopalpus Vigorsii* has occurred in profusion at Sherwood to Charles Turner; and *Macronychus* and *Potaminus*, judging from the specimens that have come under my observation, must have been found in tolerable plenty near Burton-on-Trent.

The indefatigable Mr. Brewer found the *Scopæus* above mentioned at Bettys-y-Coed, N. Wales;—curiously enough, about the same time that it was taken in Scotland by Dr. Sharp. He also secured a single *Cryptohypnus maritimus* at the same place, and an apparently new *Telephorus.* On Skiddaw he found (as did Mr. Edleston) *Otiorhynchus maurus;* and at Horning Fen took the once rare *Dromius longiceps* and *Malachius ruficollis* in quantities. Of the many other species that have occurred to him, *Bledius taurus* and *B. bicornis* in some numbers at Wells, Norfolk, *B. atricapillus* at Lowestoft, and *Homalota dilaticornis* at Reigate, are, perhaps, the most conspicuous. It may be worth noting that Mr. Brewer has also again found the lovely *Chrysomela cerealis* on Snowdon, and in some numbers.

Erirhinus pillumus has suddenly (*more Edusæ*) appeared in quantities, in more than one place; and the capture of *Omias Bohemanni* at Southend by my friend the Rev. H. S. Gorham seems worthy of note.

To enumerate Dr. Power's good captures would necessarily cause my paper to cease to be a short one. He has confirmed as British *Triplax ruficollis,* to which reference is hereafter made, and has found *Lixus angustatus* at Hastings (of which he has carefully observed the earlier stages, transformations, habits and parasites), and *Apion dissimile* at Weybridge, both in profusion, another example of *Ceuthorhynchidius pumilio* at the latter place, and very many other good things.

I have, myself, found *Ceuthorhynchus rapæ* at Tottenham, in some numbers, on *Sisymbrium officinale* (it has also been found by Dr. Power in similar quantity), *C. tarsalis* at Belvedere, and *Anisoxya fuscula, Læmophlœus bimaculatus* (also found by Chas. Turner in the New Forest), *Homalota* *oblita*, *Tetratoma fungorum*, &c., at Putney; and Mr. Lacy records *Drypta* in plenty near Gosport.

Apart from the usual vehicles of Entomological information, I am only aware of one British publication on *Coleoptera* during the past year; viz., Mr. E. Parfitt's Catalogue of the *Coleoptera* of Devon, forming part of a proposed work on the general Natural History of that county.

In this Catalogue (which is scarcely sufficiently elaborated; grievous mistakes in orthography, nomenclature, type, &c., being very numerous, besides the existence of such errors as the location of *Ephistemus*, varied to *Epistemus*, in two different families, the occurrence of *Lamprosoma* in two widely separated groups, and the transplantation of *Scydmænus* and *Euthia* into the *Heteromera*) there appear some statements with respect to certain insects which are likely to be of particular interest to the British Coleopterist. The insects to which I refer are (omitting divers Leachian and Stephensian species, which are mere revivals of the original records) as follow:—

Falagria picea, Grav., Steph. This, teste Erichson, is *F. nigra*, Grav., var.; a species not hitherto correctly recorded as British, according to the best of my knowledge.

Aleochara agilis (Kirby), Steph. This insect is supposed to be identical with *A. bilineata*, Gyll.; it is, however, separated in Mr. Parfitt's Cat. from that species, which is also included therein, immediately preceding *A. agilis*.

Philonthus cyaneipennis. "Exeter, very rare, *also* taken by Dr. Leach." The "also" would seem to imply that the former part of the sentence refers to another capture (or other captures) of this species, more recent than that mentioned in the latter part. The insect is generally considered to be doubtfully British.

Agathidium nanum, Merg. (? Megerle); Steph. Stephens' insect, as pointed out in Mr. Waterhouse's Catalogue, is *Clambus armadillo*, de G.; a species appearing, as distinct, on the same page with *A. nanum*, in Mr. Parfitt's Cat.

Atomaria atra. Hitherto included in our lists, as I believe, on the authority of dark forms of *A. mesomelas.*

Athöus cavus. "Exceedingly rare, one only taken at Newton." I imagine Mr. Parfitt's insect may be *A. difformis*, Lac. (*campyloides*, Newm.); but the female of *A. longicollis* is at once rare and deceptive.

Ceuthorhynchus ovalis, Linn. This is, I presume, the insect known to us as *C. litura*, Fab.

Callidium russicum, Fab. Mr. Parfitt records this as Devonian, stating that he has never seen it himself, but that he takes the word of Stephens for it, the latter not giving his authority. Surely it must be evident that such an attempt to revive an evidently imported Longicorn cannot have the slightest weight.

Aphthona cyparissiæ and *Dibolia cynoglossi.* Mr. Parfitt gives localities for both these rather more than doubtful insects, apparently from his own observation; but ascribes both as species to an author, variously termed "Halidy" and "Halad.," who appears, according to Mr. Parfitt, to have published them in a work referred to as "Ent.," with which I am unacquainted.

Both species were originally described in the Ent. Hefte, anonymously.

Coccinella hyperborea. "Common" (usually considered as doubtfully indigenous).

Besides the above, Mr. Parfitt's following remarks upon certain well known species appear to me note-worthy:

Pterostichus cupreus, red-legged var. "Equally common with the species."

Bembidium obliquum. "Exeter district."

Oxypoda vittata. "In Boleti."

Homalota gregaria. "In fungi."

Staphylinus erythropterus. "Generally distributed."

Silpha subrotundata. "Christow." (Hitherto only known to me from Ireland.)

Olibrus æneus. "On fir trees." (Invariably occurs with us on chamomile, or *Matricaria.*)

Blaps mortisaga, Linn. "Common." (? *mucronata,* Lat.)

Sitones regensteinensis. "On beans." (With us it always occurs on broom.)

Hylobius abietis. "I have never met with it on firs, but have always taken it on ivy, on the leaves of which it feeds." (In its home, Scotland, there can be no mistake as to its fir-feeding habits.)

Cossonus linearis. "In sugar." (A truly wonderful habitat for the species.)

Trichopteryx littoralis. "On the coast." (? *fucicola,* All.)

Mr. Parfitt, speaking of Dartmoor, rightly suggests that *Crioceris asparagi* and a few other universally distributed insects, which he refers to as the most marked forms inhabiting that district, cannot be called mountain or northern species. It is noteworthy, however, that out of a few insects taken in that region by Mr. Wollaston and sent to me, there should be more than one of a *Patrobus* (a genus not included in Mr. Parfitt's Cat.) perfectly identical with the *P. assimilis,* Chaud. (*clavipes,* Thoms.), found so abundantly on the Scotch mountains.

Looking prospectively, it may be a subject of congratulation to us that the Part containing the *Coleoptera* of the Catalogue of British Insects proposed to be undertaken by ths Entomological Society is not unlikely to be published before long. The Rev. A. Matthews has, also, completed the dissections, drawings and descriptions for his much looked-for Monograph of *Trichopterygidæ;* a book that will certainly cast into the shade all former works on that most puzzling family of atoms.

With regard to the species now to be recorded, no division into classes (as in the last "Annual") is required, on account of the small number requiring comment.

1. PHYTOSUS NIGRIVENTRIS, Chevr.

Mr. G. R. Crotch (Newman's Entomologist, 35, p. 175) remarks that this species, nearly allied to *P. balticus* (Ent. Ann. 1867, p. 59), seems to replace that insect on our southern shores. The only southern example that has occurred to me, from the Isle of Wight, is, however, not separable from the Northumberland *balticus*.

2. THIASOPHILA INQUILINA, Märk.; Wat. Cat.

In the Entomologists' Monthly Magazine, vol. iii, p. 189, I have at full length stated my reasons for uniting the insect known in England as *Euryusa Kirbyi* with this species; such collocation having been questioned by my friend Mr. G. R. Crotch (l. c.).

There seems to be no occasion at present to go any further into the question, as I have not as yet observed any reply to my remarks.

3. CRATARÆA (HAPLOGLOSSA) ERYTHROCERAS, Steph.
prætexta, Er.

Mr. Crotch (l. c.), while giving priority to the Stephensian name, which he employs in the 2nd edition of his Catalogue, states that it is in turn superseded by *suturalis*, Sahlb.

4. Aleochara algarum, Fauvel; Ent. Ann. 1867, 59.

Mr. Crotch (l. c.) is not quite correct in attributing the *A. Fauvelii* of my Catalogue to this species. As mentioned in the last "Annual," it is to *A. grisea*, Ktz., that *A. Fauvelii* is properly to be referred.

5. Oxypoda humidula, Kraatz; Ent. Ann. 1867, 108.

Mr. Crotch (l. c.) withdraws his proposed name of *Erichsoni* for this species.

6. Oxypoda sericea, Heer.

Mr. Crotch (l. c.) states that comparison of typical specimens show that Mr. Waterhouse's *O. nigrina* belongs to this species; with which Fauvel unites *O. exigua*, Er., an opinion in which Mr. Crotch does not concur.

7. Oxypoda incrassata, Muls.

Mr. Crotch (l. c.) remarks that Mr. Waterhouse's expressed doubts as to the identity of his *O. aterrima* with this species now prove to have been correct.

8. Homalota algæ, Hardy, Ent. Ann. 1867, 109.

Mr. Crotch (l. c.) thinks that Hardy's name ought to be retained for one of the two distinct insects confused in his supposed species. I cannot agree with him in this respect, though most anxious to retain a British author's name, if it be really entitled to stand.

Moreover, that one of these two insects to which Mr. Crotch attributes Hardy's *algæ* has been proved to be the prior-described *H. atricilla* of Erichson.

9. HOMALOTA DEPRESSA, Fab.

Mr. Crotch (l. c.) suggests the adoption of this name for the insect known to us as *H. brunnea*, which, as he states, is identical with *Homalium brunneum*, Payk.

10. OLIGOTA PARVA, Kr.

pygmæa, Kr. [nomen prius usitatum].

Mr. Crotch (l. c.) adopts this correction.

11. QUEDIUS RUFIPES, Er.

Mr. Crotch (l. c.), referring Marshamian types of *Q. semi-obscurus* to this species, proposes to retain the Erichsonian *semi-obscurus* in place of Stephens' *semi-æneus*, though Erichson's name refers to the Marshamian insect. This, surely, is inadmissible.

12. PHILONTHUS CONCINNUS, Grav.; Ent. Ann. 1867, 65.

Mr. Crotch (l. c.) states this to be a small form of *P. ebeninus*, noticed by Erichson and Kraatz, but apparently possessing constant specific characters; also that Thomson first (I presume, secondly) regarded it as a species, under the name of *varians* (nec Payk.).

13. LEPTACINUS PUSILLUS, Steph.

Mr. Crotch (l. c.) adopts this name for the insect known to us as *L. linearis*, Grav., the specific appellation of which clashes (as he says) with the *Xantholinus* of the same name.

14. LITHOCHARIS FERRUGINEA, Er.; Ent. Ann. 1867, 66.

Mr. Crotch (l. c.) thinks there may be some confusion between this species and *L. brunnea*, some insects which he has attributed to the latter having the longitudinal thoracic groove characteristic of the former. He suggests an error on the part of Dr. Kraatz.

15. **Lithocharis ruficollis**, Kraatz.

Mr. Crotch (l. c.) deposes the Marshamian *tricolor* as clashing with the *Xantholinus* of that name.

16. **Micra(ca)lymma marina**, Ström.

Mr. Crotch (l. c.) restores this name, antecedent to the Gyllenhalian *brevipennis;* remarking that Mr. Haliday appears to have first noticed that Ström described the insect with his *Æpys* of the same name.

17. **Bledius pallipes**, Grav.; G. R. Crotch, Cat. Brit. Col. ed. 2; E. C. Rye, Ent. Mo. Mag. vol. iii, p. 232, 4.

This species, originally included in Mr. Waterhouse's Catalogue, but subsequently withdrawn, on account of certain discrepancies between the insect at first so named by that gentleman and Gravenhorst's species, and now represented by the "*Bledius* 5 sp. — ?" of his Catalogue, is again brought forward as British (but with a query) by Mr. Crotch.

I have certainly (though I have examined many specimens from different localities) never yet seen anything exactly agreeing with the descriptions of Gravenhorst's species. Indeed, there would appear to be some difficulty on the Continent in making out the latter; as I have even been informed that so acute a Coleopterist as M. Ch. Brisout, to whom examples of my *B. fuscipes* had been sent, had referred *that* species to *B. pallipes*. On my communicating with him on the subject, and pointing out the published discrepancies between the two insects, M. Brisout courteously writes to me that a second and more careful examination of *B. fuscipes* has convinced him not only of the impossibility of referring it to *B. pallipes*, but of the validity of my species. Nevertheless, I am subsequently informed that M. Fauvel, who, as I believe, meditates a revision of the European *Brachelytra*, refers my insect to *B. pallipes;* on what grounds I know not.

18. OXYTELUS MARITIMUS, Thoms.; W. R. M'Nab, Ent. Mo. Mag. iv, 112.

Dr. M'Nab has pointed out, on the authority of a specimen given to him by Mr. Murray and taken by Mr. Hardy himself, that the *O. flavipes* of Murray's Catalogue is referable to this insect. It seems unfortunate that, however correct this determination may be as regards the insect meant by Messrs. Hardy and Murray, the *O. flavipes* of Stephens, to which those gentlemen refer it, does not exist in the Cabinet of the latter author; the description and localities given rendering it, indeed, more than doubtful whether *his* species can be the same as that subsequently (and well) described by M. Thomson.

19.? SYNCHITA MEDIOLANENSIS, Villa, Col. Europ. dupl. 36, 38; Erichs. Ins. Deutschl. iii, 271, 2.

To this species is referred with doubt the *Synchita* recently taken (in some quantities) in the New Forest by Charles Turner. It would appear to be impossible to form a decided opinion without comparing it with *S. juglandis*, an insect in very few British collections; and even then there would remain some doubt as to its correct determination, for

Mr. Janson (by whose permission I provisionally register the insect here) tells me that in his opinion the *S. juglandis* of M. Allard's Collection is represented by Turner's species.

S. mediolanensis appears to be narrower than *S. juglandis*, with a larger and broader club to the antennæ; a longer, only gently rounded, more widely and strongly punctured thorax; more strongly punctured striæ, and stouter and thicker setæ on the elytra. In colour it is quite at variance with Turner's insect; being testaceous or rufo-testaceous, instead of pitchy-black, with a light humeral patch.

20. **Diplocælus fagi**, Guérin, Spéc. et Icon. Gén. &c. 126; Aubé, Ann. de la Soc. Ent. de Fr. 1850, 329.

The grand addition of a new genus (of *Mycetophagidæ*) to our list was effected by Charles Turner, when he captured several examples of the above insect in the New Forest, during the past autumn; having been sent to that well known locality by Messrs. Janson and Crotch. I register the insect provisionally by permission of the former gentleman.

It superficially resembles *Triphyllus punctatus*, but is considerably smaller than that species, from which it may be readily known by its short antennæ, of which the 3-jointed club has the two apical joints abruptly broadened, its laterally channelled thorax and punctate-striate elytra, of which the interstices are flat, &c.

21. **Elater coccinatus**, E. C. Rye, Ent. Monthly Mag. vol. iii, p. 249 (*described*).
5 *nov. sp.*? Wat. Cat.; E. C. Rye, loc. cit., p. 233.

Taken in Kensington Gardens and Windsor Forest; and not to be reconciled with any previously described species with bright red elytra,—chiefly through its narrow, parallel shape, long, parallel, dull and densely punctured thorax, and the slight striæ and flat interstices of its elytra. It resembles the immaculate form of *E. sanguinolentus*, Schr. (*ephippium*, olim), more than any other species with which I am acquainted; but may be readily separated from that insect by its larger antennæ, longer, duller and posteriorly canaliculated thorax, &c.

It seems scarcely credible that so conspicuous an insect should have hitherto escaped record; but my notice seems to have failed as yet to produce any attempt to identify *E. coccinatus* with a previously recorded species.

22. ELATER PRÆUSTUS, Fab., Germ.; G. R. Waterhouse, Trans. Ent. Soc. vol. v, n.s. pt. iii; E. C. Rye, Ent. Mo. Mag. iii, 250.

This insect appears not to be included in any of our recent Catalogues; but Mr. Waterhouse, in his paper on the *Elateridæ* in the Stephensian Cabinet (loc. cit.), points out that there is an example of it among Stephens' *E. pomonæ*.

Its red elytra being tipped with black would readily distinguish it from all our species except *E. elongatulus*; from which its much larger size and broader build would at once separate it.

23. AGRIOTES PILOSUS, Panzer; G. R. Waterhouse, loc. cit.; J. A. Power, Ent. Mo. Mag. vol. i, p. 235; Ent. Ann. 1866, p. 88, 41.

Mr. Waterhouse, in the paper above referred to, first pointed out the claims (such as they are) of this species to be considered British; the *Athöus elongatus* of Stephens' Cabinet being, according to him, represented by an example of *Agriotes pilosus.* Mr. Waterhouse, however, expresses a doubt as to the authenticity of the British origin of this example,—a doubt amply borne out by the reference to *A. elongatus* in the "Manual."

24. **Eros affinis**, Payk.; Kies., Ins. Deutschl. iv, 441, 4; E. C. Rye, Ent. Mo. Mag. iii, 251.

A single specimen of an insect which I have referred to the above species was taken at Killarney in 1866 by a son of Mr. J. Hardy, of Emden Street, Hulme, Manchester. At the same time a pair of elytra of the same species were found floating at the edge of the lake.

E. affinis is smaller than *E. Aurora*, and readily distinguishable from that species by its black thorax, of which the anterior margin (which is minutely but sharply notched in the middle) is obscurely reddish; the small size of the third joint of its antennæ, which is but little longer than the second; and its shorter elytra, the interstices between the four elevated ridges of which are not broken up by supplementary longitudinal striæ, but are uninterruptedly transversely reticulate. The scutellum is straightly truncate behind; the thorax broader, less contracted in front, and with the discal fovea more oblong oval than rhomboidal.

Kiesenwetter (l. c.), continuing the comparison with *E. Aurora*, states that the joints of the antennæ are shorter and thicker in *E. affinis* than in that species; but, from an examination of a German type of *E. affinis* (agreeing in every other respect with his description) in the Brit. Mus., I find the exact converse to be the case.

25. ORCHESIA FASCIATA, Payk.

Mr. Crotch (Newman's Ent. 35, p. 174) follows Thomson in reverting to this name, instead of adopting *undulata*, Kr.; and in assigning *fasciata*, Kr., to *trifasciata*, Zett.

26. CARIDA FLEXUOSA, Payk.

I have to admit my error in omitting this species from my Cat. It seems not unlikely to find its way into our collections now.

27. LISSODEMA HEYANA, Curt.

Mr. Crotch (l. c.) reverts to Curtis' name; as, although the *cursor* of Gyll. is prior to it, Linnæus, from whom he took the name, intended *Silvanus surinamensis*, as shewn by his collection and description.

28. ŒDEMERA NOBILIS, Scop.

Mr. Crotch (l. c.) remarks that this name is anterior to the *cærulea* of Linn. by some years; and that its adoption will obviate the difficulty of the same specific appellation occurring in two closely allied genera.

29. MORDELLA ACULEATA, Linn.

Mr. Crotch (l. c.) records specimens of this doubtfully indigenous species from the West of England; and has two or three from Mr. Wollaston's Collection.

30. MORDELLISTENA PARVULA, Gyll.

Mr. Crotch (l. c.) states that this is the earliest name for the *M. inæqualis* of his Cat., 2nd ed.; a name representing the *pusilla* of our older lists.

31. ANTHICUS SCHAUMII, Woll.

Mr. Crotch (l. c.) doubts whether this, which represents the *A. tristis* of Wat. Cat., is more than a variety of that species; though it does not appear that we have the type form of *A. tristis* in this country.

32.? ANTHICUS FLAVIPES, Panzer, Faun. Germ. F. 58, t. 22; La Ferté, Mon. Anth. p. 222 (var. *rufipes*, Payk.); E. C. Rye, Ent. Mo. Mag. iii, 233, 21.
6 *sp. nov.*? Wat. Cat.
ater, Murray, Cat. of Scotch Col. 103; nec Panz.

I have, loc. cit., stated at length my reasons for supposing that M. du Val could scarcely have been correct in referring specimens of an insect taken by Mr. Morris Young, near Paisley, and sent to him by the latter gentleman, to the *A. flavipes* of Panzer. Neither can it possibly, according to La Ferté, be *A. ater*, though represented by that name in Mr. Murray's Catalogue: *A. ater* is, however, stated by La Ferté to occur in England, probably on account of its being included in Stephens' list.

A description of it will be found in the Ent. Mo. Mag., as above; and I cannot but think the insect has as yet escaped the observation of Continental authors.

33. OTIORHYNCHUS MUSCORUM, Ch. Brisout, in Grenier's Cat. Col. de France et Mat., &c., p. 109, 131; E. C. Rye, Ent. Mo. Mag. iv, p. 65.
pabulinus, Walton, nec Panzer.

When Dr. Sharp and Mr. Crotch published their list of new species referred to in the last Ent. Annual, the above determination (of which they informed me at the time) escaped record.

The insect is common in moss in various parts of this country, and has long been recognized by British Entomologists; who could not believe it was (as the true *O. pabulinus*, Panz., appears to be, teste Stierlin, Rev. d. eur. Otiorh. Art., 286) a mere colour variety of *O. ovatus*, Linn.

It is smaller and lighter-coloured than the latter species, with evidently shorter and less robust antennæ and legs (the posterior femora being very feebly toothed beneath); longer, narrower and more parallel elytra, the pubescence on which is as it were condensed into faint and irregular indications of somewhat transverse spots; and a less strongly tuberculated thorax, the middle of which exhibits only a faint longitudinal wrinkling in comparison with the furrows of *O. ovatus*. In addition to most of these distinctions M. Brisout remarks that it has a narrower rostrum, which is distinctly depressed in the middle: the latter character I find is best observed with a glass of low power.

34. CEUTHORHYNCHUS VERSICOLOR, Ch. Brisout, in Wencker and Silberman's Cat. des Col. de l'Alsace et des Vosges, p. 131 ("L'Abeille," iv, 1867, xlix); E. C. Rye, Ent. Mo. Mag. iii, p. 215.

quercicola, Wat. Cat., nec Fab.

M. Brisout has now published, as above, his description of the species which Mr. S. R. Crotch (as recorded in the "Annual," for 1867), informed us, on the authority of the former gentleman, was identical with the insect known to us hitherto as *C. quercicola*. This insect is a *Ceuthorhynchidius*, having but six joints to the funiculus; and seems to occur sparingly all over the country, having been often taken at Mickleham by Mr. S. Stevens and others, and also near Edinburgh by Dr. Sharp.

35. CEUTHORHYNCHUS EUPHORBIÆ, Ch. Brisout, loc. cit.
crux, Walton, M.S.; Wat. Cat.
cruce-signatus, Dawson, Wollaston, in litt.

M. Brisout has also published his description of this species, the MS. name of which was also made known to us by Mr. Crotch (vide "Annual," 1867).

It is worthy of remark that observers so careful as Messrs. Dawson and Wollaston have entertained the idea that our *C. crux* is only the male of *C. urticæ*, Schön.; and I must admit that all my own specimens, some half-dozen, appear to be of the male sex. I have, however, never taken the insect on nettle; but have always understood it was to be found on *Veronica*.

It has lately been taken as far north as Dumfries, by Dr. Sharp.

36. XYLOTERUS WARINGII, Curtis, Ann. and Mag. of Nat. Hist. v. No. xxxi, p. 279, Art. xxxii (*Bostrichus*, 1849); E. C. Rye, Ent. Mo. Mag. iii, p. 250.
quercûs, Eich., Berl. Ent. Zeit., 1864.

There seems little doubt that Curtis' insect is identical with Eichhoff's species; but, although the former's description is by far the oldest, I fear that Eichhoff must be considered as the real describer of the insect, since he points out its structural characters, and differences between it and the closely allied *X. lineatus*, upon which Curtis is necessarily silent.

37. CHRYSOMELA SANGUINOLENTA, Linn.

Mr. G. R. Crotch, Newman's Ent., 35, 173, unites *C.*

distinguenda to this insect, as a "sub-species," apparently on the authority of Dr. Baly's investigations.

38. CHRYSOMELA HYPERICI, Forst.

Mr. Crotch (loc. cit.) states that the insect recently called *fucata* in our Catalogues is well described by a very applicable name by Forster; which name has, moreover, been in constant use.

39. LINA LONGICOLLIS, Suffr.

Mr. Crotch (loc. cit.) remarks that Suffrian himself points out that the English species hitherto known as *L. tremulæ* was referable as above. The true *L. tremulæ*, Fab., should have a thorax like *L. populi*, but be smaller than that species, and have no apical black spot.

40. PHÆDON ARMORACIÆ, Linn.

Mr. Crotch (l. c.) refers to M. Suffrian's reasons (in Stettin. Zeit.) for deposing this name in favour of *P. betulæ*, Linn.; and gives *cochleariæ*, Ol., as the correct name of the *betulæ* of our lists.

41. LYPERUS BETULINUS, Fourc.
rufipes, Wat. Cat.

Mr. Crotch (l. c.) states that M. Joannis, in his monograph of this group, has shewn the true *L. rufipes*, Fab., to differ from the insect usually known by that name in having entirely red legs, &c., and to be much rarer than our common species.

42. APHTHONA CÆRULEA, Payk.

Mr. Crotch (l. c., 174) states that our *A. pseudacori* is certainly referable to this species; and that the *A. violacea* of Ent. Heft., to which it has usually been referred, is much smaller and more like *A. euphorbiæ*, Fab.

43. MANTURA CHRYSANTHEMI, Ent. H.

M. Allard (Mon. des Alt., L'Abeille, 1866, p. 501) notices some British examples of this species which depart from the type form in the punctuation of the thorax being more scattered, and finer on the disc; the rather redder colour of the elytra, of which the suture is brownish; and the rather greater contraction and acumination of the elytra at the extremity.

M. Allard, doubting the sufficiency of these characters to establish a species, proposes to add the insects possessing them to the type form as var. *Crotchi.*

44. THYAMIS CASTANEA, Foud.; Ent. Ann., 1867, p. 96.

Mr. Crotch (l. c., 174) states, on the authority of M. Allard, that our fen "*brunnea*" are all referable to this species. He remarks, however, that we have the true *T. brunnea*, mixed with *T. lurida*, from which its rounded shoulders at once separate it. It seems, also, to tend to black in colour.

45. THYAMIS PATRUELIS, Allard, loc. cit., p. 398, 263 (p. 230 of Mon.); G. R. Crotch, Cat. Brit. Col. ed. 2; Newm. Ent. 35, p. 174; E. C. Rye, Ent. Ann., 1867, p. 96, 108; Ent. M. Mag. iii, p. 234, 22.

26 *sp*—— ? Wat. Cat.

lateralis, All. (olim); Crotch, Cat. Brit. Col. ed. 1; nec Illig.

Mr. Crotch states that M. Allard, having recognized that his *T. lateralis* was not the same species as Illiger has described under that name, has proposed for it the name first above referred to.

Mr. Waterhouse's insect, identical, as I believe, with this species, is allied to *T. melanocephala*, differing from it in being smaller, and having less evident shoulders to the elytra, which are more deeply punctured, the punctures running somewhat into striæ.

Dr. Sharp has sent me an insect taken in some numbers in a salt marsh near Dumfries, which I am unable to separate from a type given me by Mr. Waterhouse of his species.

46. THYAMIS MEMBRANACEA, Foud., Kuts.; Allard, loc. cit., p. 346 (Mon. p. 178).
teucrii, All. (olim); Crotch, Cat.

M. Allard refers his *T. teucrii* to this species. It represents the *T. minuscula* of Mr. Waterhouse's Cat., but seems to differ from the true species of that name in its rather more robust shape and clearer rufo-ferruginous colour, the much less close, coarser, and more serial disposition of the punctures of its elytra, which are, moreover, individually more obtusely rounded behind.

47. THYAMIS POWERI, Allard, loc. cit., p. 408 (p. 240 of Mon.), 273, 97.

Described by M. Allard from four specimens taken by Dr. Power, resembling the recently described *T. gracilis*, Kuts. (which, itself, resembles small *T. ochroleuca*, without the blackened posterior femora), but differing from that species in having the vertex, scutellum, sutural margins of the elytra, breast and abdomen brown; the joints of the antennæ rather longer, the seven apical joints being darker; and the punctuation of the thorax closer and more distinct, and of the elytra more evident. The male, also, has a well marked rounded depression on the last segment of the abdomen, instead of a fine medial longitudinal line, as in the same sex of *T. gracilis*.

In dedicating this insect, M. Allard says, "Je lui ai donnée le nom de M. Power, qui l'a prise en Angleterre, avec la pensée de rendre à cet Entomologiste distingué un hommage légitimement dû." I rejoice that there appears more than a chance of Dr. Power's name being perpetuated in British Entomology by this *Haltica*; my own efforts with *Ceut. Poweri* having proved abortive.

48. Thyamis picipes, Steph., Ill. iv, p. 309; Foud.; Kuts.

M. Allard (l. c., 385) refers his former *T. atricapilla* to this species.

49. Dibolia occultans, Hoffm.; Foud.; Kuts.; All., l. c., 262.

M. Allard (I suppose on the authority of the quotation in Stephens' Ill.) refers this species to England. Oddly enough, though also in that instance quoting Stephens, he does not attribute *D. cynoglossi* to us, an insect which does occur in our Catalogue,—though with much doubt.

50. Pyslliodes cucullata, Ill., Foud., Kuts.; All., l. c., 312.

M. Allard (without, however, quoting any English author) refers this insect to all Europe. It seems to be of the size of *P. attenuata,* but to be narrower, more convex, more contracted at each extremity, and with its head immersed in the thorax, and perpendicularly inclined in front.

It appears to live on *Spergula arvensis.*

51. TRIPLAX LACORDAIRII, G. R. Crotch, Newman's Ent., 35, p. 174.
ruficollis, Lacord. Mon. des Erotyl., p. 211, sp. 10; nec Steph.
bicolor, Steph. coll. pars.

Mr. G. R. Waterhouse, in his notes on the species of *Triplax* of Stephens' Ill. and Coll. (Trans. Ent. Soc., vol. i, 3rd series, p. ii, 3 Dec., 1860), has pointed out that one of Stephens' *T. bicolor* (*ænea,* auct.) was referable to Lacordaire's species above quoted, and was in all probability truly indigenous. Lacordaire appears to have also referred Stephens' *ruficollis* to this insect; but the Stephensian species of that name seems to be *T. nigriceps,* Lac.; Mr. Crotch has accordingly (loc. cit.) re-named the French author's *ruficollis,* described some years after publication of Stephens' species of the same name; and at the same time has expressed a doubt with regard to the true British character of this and two others in the same genus. Dr. Power has, however, recently taken a specimen of *T. ruficollis,* Lac., out of a fungus at Erith.

It resembles *T. ænea* in size, but has black elytra, with the interstices of the striæ distinctly punctured and a black scutellum.

52. COCCINELLA BISSEXGUTTATA, Fab.

Mr. G. R. Crotch (l. c.) states that he has seen three or four certainly indigenous examples of this insect, usually, but erroneously, considered to be the female of *C.* 16-*guttata*, of which he has both sexes.

53. **Lathridius carbonarius**, (Chevrolat) Mannerheim, Versuch ein. Mon. Darst. d. Käf. Cort. u. Lathr., p. 103, 42.

Taken in quantity during the past autumn by Charles Turner in the New Forest, and given to me, with the above name, by Mr. E. W. Janson, by whose authority I register it here.

It differs from *L. minutus* (apart from other characters) in its average smaller size, more elongate and linear shape, opaque appearance and shorter antennæ, and in the very evident oblique impression on each elytron below the base.

54. **Euplectus Easterbrookianus**, Leach, Zool. Journ. vol. 2, p. 445; Steph. Man. Brit. Col. p. 349, 2732; E. Parfitt, Nat. Hist. of Devon, Part ii, *Coleoptera*, p. 24.

Mr. Parfitt remarks thus in his Catalogue concerning the above insect:—"What this species really is, I know not; it was a desideratum with Mr. Stephens, and I have never seen it. Mr. Waterhouse does not even give it as a synonym, but Dr. Leach was too accurate an authority to be passed over in silence."

On this (lack of) evidence, it would, perhaps, have been as well to have avoided bringing such an obscurity forward. Denny does not mention it; and Aubé (Mon. Psel., p. 61) reproduces the Leachian description in inverted commas, with the remark "*insecto inviso.*"

55. TRICHOPTERYX VARIOLOSA, Mulsant, Opusc. Ent. xii, p. 187, 1861 (*Ptilium*); Rev. A. Matthews, Ent. Mo. Mag. iv, p. 18.

littoralis (*Bœocrara*), Thomson (nomen prius usitatum).

Thomsoni, D. Sharp, Ent. Mo. Mag. ii, p. 230.

Mr. Matthews, having now dissected the organs of the mouth of the insect to which the above quotations refer, and finding them exactly similar to the corresponding parts in undoubted members of the genus *Trichopteryx*, save certain slight (and, in his opinion, only specific) differences in the labrum and maxillary palpi, comes to the conclusion that Thomson's genus *Bœocrara* must fall to the ground. The anatomy of the underside and shape and neuration of the wing appear to be alike in this insect and the most typical *Trichopteryx;* in which genus Thomson's character of the margined sides of the thorax seems almost to be universal.

Mr. Matthews rejects the name *Thomsoni* proposed for the species above referred to by Dr. Sharp, as Mulsant had long before the publication of the 2nd vol. of the Ent. Mo. Mag. described it under the name of *Ptilium variolosum;* a fact detected by Dr. Sharp soon after he had proposed to give Thomson's name to the insect which that author had origiginally described under the name *littoralis*, already occupied by Motschulsky for another allied species.

Mr. Matthews suggests the possibility of a doubt as to whether the British examples be really referable to the *B. littoralis* of Thomson, on account of his not having yet obtained from the latter a type of his insect.

I have deferred noticing the second species of *Eros* mentioned in my introductory remarks until the end of this paper, in the hope of being able to say something definite about it. It was taken (by sweeping) in Sherwood Forest during the past summer, in some numbers, by the Rev. A. Matthews; who, being unable to refer it satisfactorily to any recorded European species, has sent a specimen to M. Brisout, for comparison with *E. alternatus*, Fairm. M. Brisout has not as yet pronounced any opinion upon the insect: but I may observe that a type of *E. alternatus* in Mr. Janson's Collection is certainly specifically distinct from it. If new, as Mr. Matthews thinks it possibly may be, since it does not perfectly agree with any description yet published, a further account of it will appear from that gentleman's pen in an early No. of the "Entomologist's Monthly Magazine."

The insect, a most beautiful one, is figured on our frontispiece. I am not in a position to express any decided opinion upon the point; but certainly, from recollection, think that Mr. Matthews' insect is specifically identical with the single specimen from Killarney (not in my possession) upon which I introduced *E. affinis*, Payk.; with the description of which species Mr. Matthews' insect appears to me to agree in every essential point, except in Kiesenwetter's character of the greater thickness and the shortness of the joints of the antennæ (but not referring to the third joint specially, the shortness of which is very evident in Mr. Matthews' insect), as compared with *E. Aurora*. I am, however, as may be inferred from the remark on this point at p. 68, not inclined to lay any stress upon this character.

E. C. Rye,

7, Park Field, Putney, S.W.
19*th Nov.* 1867.

HYMENOPTERA.

NOTES ON HYMENOPTERA.

BY FREDERICK SMITH.

Two years have elapsed since I contributed a few notes on British Hymenoptera to the "Entomologist's Annual," and within my experience, no two seasons will parallel their unproductiveness of novelty, or the scarcity of Hymenopterous insects generally.

I have no species new to the British list to chronicle, and but very few captures of rarities to enumerate. The general scarcity of *Aculeata*, during the past season, can, I think, be readily accounted for; quite in early spring we had an interval of hot summer-like weather, when spring bees appeared in considerable numbers; more so, indeed, than I have observed them to do for some years past; in fact, a recurrence of a glorious season, such as we enjoyed some twelve or fourteen years ago, appeared to be opening upon us; alas! our expectations were speedily doomed to disappointment; winter, as it were, stepped back to give us a parting greeting, and again chilled us with a salute of frost and snow. The hot weather that preceded this unwelcome return had roused the insect world, vast numbers had come forth, probably most of those which had passed the winter in torpidity, in their perfect condition; others that had, during that inclement period, remained in the larva state, then changed to pupæ, and all such, I have little doubt, perished on the return of the cold, wet and severe weather we again experienced.

Vespidæ were numerous during the hot weather alluded to, and that family, according to my observation, is the first to perish under such circumstances as followed that interval. I have not seen, probably, more than twenty wasps during the past summer and autumn, although, in some districts, I have ascertained, they were numerous; such is, no doubt, usually the case during seasons when these insects are not universally so. In the year 1860, I believe, I only saw three wasps; but I was at that time informed, they had been very plentiful in the neighbourhood of Kelso.

Observation has shown, that seasons in which *Hymenoptera* are generally abundant have been preceded by severe winters, followed by genial spring weather unbroken by any interval of severe frost, or any superabundance of heavy rains; a combination of both is most fatal to insect life.

In the month of June last, I visited a locality where an extensive colony of *Anthophora acervorum* has long been established; on examining their burrows, I found not less than twenty dead bees for every living one; the majority of the dead ones were in the pupa state, others more or less advanced towards the perfect condition; such, I believe, will always be found to be the case, where weather, such as we experienced at the beginning of the last Entomological season occurs.

During the summers of 1858-9, I visited the neighbourhood of Lowestoft in Suffolk; a locality, at that time, extremely rich in rare and local *Hymenoptera;* again I visited the same spot last season, when, on the contrary, an Hymenopterous insect was quite a rarity. In no place, with which I am acquainted, are *Bombi* usually more abundant; and I am not in the slightest degree underrating the number, when I estimate the number that I saw on the wing at about thirty individuals. During the entire month of August the weather was all that could possibly be desired, even by an Entomologist, yet even this failed to produce insects of any order in abundance.

One circumstance in connexion with such Aculeate *Hymenoptera* as I met with is certainly remarkable; the majority of them were mere Liliputian representatives of their race; some of the working bees, of *Bombus lapidarius*, were so diminutive, that I mistook them for a species of *Osmia*. The sandy cliffs and banks near Lowestoft usually swarm with fossorial insects, but last season they were quite as scarce as the bees; and the specimens of *Tiphia femorata* were miniature representatives of the species.

I have endeavoured to show the effect of certain conditions of weather upon Hymenopterous insects, but their scarcity is not at all times to be attributed to such influences; other causes operate frequently in causing a scarcity, or even a total absence of them, from localities where they may have been found abundantly for several years; such disappearances will frequently occur during the most favourable seasons.

For years past, I have felt assured that *Hymenoptera*, as well as other insects, migrate from one locality to another; and, we are frequently told, that certain species have been hunted up, even to annihilation, in certain places; but observation has induced me to believe that, in most instances, their disappearance is due to other causes. I have observed the common *Anthophora acervorum*,—a bee that colonizes in larger numbers, perhaps, than any other,—after having occupied a bank for several years, until it has become completely riddled with its burrows, suddenly desert it; the same circumstance has also come under my observation with a large colony of *Eucera longicornis*, which quitted its long-established abode on the south side of Highgate Archway, and established a colony on the north side; where, I believe, it is to be found up to the present time.

Several causes for these migrations may be suggested; where extensive colonies have for a long time existed, the bank in which they burrow at last becomes, as it were, completely honey-combed, so that fresh space for new burrows becomes exhausted; parasites may also become so numerous, and other insects so obnoxious to the bees, and so formidable in numbers, that the colony is compelled to seek for new and more favourable quarters. Colonies may, probably, sometimes be entirely exterminated by parasitic *Acari*. That such was the case with a very extensive one that formerly existed at Northfleet, I have every reason to believe.

The *Acarus* to which I have alluded was described by Newport in the 21st volume of the Linnæan Transactions, and named *Heteropus ventricosa;* unfortunately the generic name had been used by no less than seven previous authors; I would therefore propose to substitute the generic appellation of *Newportia*.

This extraordinary parasite is only occasionally found, and, as far as my experience enables me to judge, only in old, long established colonies. From the one alluded to above I several times obtained larvæ of *Anthophora* for the purpose of tracing their changes, and also of rearing some of the various parasites by which they are attacked. On one occasion I procured upwards of a hundred, and of these, full two-thirds were destroyed the following spring by this exterminating *Acarus*.

This parasite feeds alike on the larva and pupa of the *Anthophora*, and these, when attacked by it, have the appearance of being covered with minute semi-transparent globules. I had frequently observed these previous to Newport's discovery of their being living creatures: they are extremely minute, and without the aid of a powerful microscope their real nature would scarcely be detected.

I may here record a very remarkable circumstance in connexion with these *Acari*. Having kept several larvæ, attacked by them, in glass tubes for the purpose of observing their progress, I found that the creatures never quitted their victim; their proboscis, or sucking apparatus, being inserted into the larvæ at the time of their birth, and in this state they imbibe its juices, arriving at their full growth, when nothing is left of their victim except its thin epidermis. When the *Acari* are fully matured, their bodies become so distended, apparently with an incalculable number of eggs, that it bursts open, and is then found to be filled with a fine brown powder or impalpable dust, this dust being the eggs of the *Acarus*. The following spring I obtained larvæ of *Anthophora*, as well as those of *Osmia bicornis;* these I sprinkled with some of the dust, and in each case the parasites were shortly developed.

Four years subsequent to this experiment, I found one of the glass tubes containing the dust of the *Acari*, and had the curiosity to try its effect upon fresh larvæ; I therefore procured some, of several species of bees, and to my gratification, with the same successful results. I am strongly inclined to believe, that whenever the eggs of the *Acarus* come in contact with suitable nourishment, their development will follow, irrespective of lapse of time.

These are a few of the causes that may tend to render old bee colonies untenantable, and conduce to the emigration of the bees: there are many others, but enough has been adduced to show the probability of our position.

In the year 1851, when on a collecting excursion to the Isle of Wight, I captured *Philanthus triangulum* in great numbers in Sandown Bay, since which it has been taken in the same situation by other Entomologists; but I have reason to fear this fine insect has now quitted that locality. Mr. Pascoe, who resided at Ventnor some months during the past season, searched diligently for the species without finding a single specimen. Assuming this to be an example of insect migration, what circumstances have occurred likely to prove an adequate cause? The same slopes in which I found them burrowing still remain at the foot of the cliffs, the blackberry bushes still blossom, on the flowers of which I took them in plenty, and their prey, *Halicti* and Hive Bees, are no doubt as plentiful as ever: such being the case, it becomes a matter of impossibility even to suggest a probable cause, since I am not aware of any attack on *Philanthus* by any species of parasite likely to render their old locality untenantable. Atmospheric changes may no doubt operate strongly upon them—a long continued season of cold wind and rain, coming in an unfavourable direction, might so interfere with their operations as to drive them to seek some more sheltered situation; but of all places in the Isle of Wight, the Undercliff is, perhaps, the least likely to be so visited.

Among the captures made by Mr. Pascoe of Hymenopterous insects, in the above locality, I noticed examples of most of the rarities which fell to my lot sixteen years ago, the rarest being *Aporus unicolor*, and next in point of rarity may be mentioned the male of *Methoca ichneumonides*. I have only taken five specimens of this male during the long period of my Hymenopterous explorations. It is very probable that this insect is the parasite of some species of *Noctua* —I think, certainly, of some Lepidopterous insect, since Mr. Bakewell obtained species of *Thynnidæ* from cocoons of moths in Australia, and *Methoca* is the only known representative of that family hitherto taken in this country.

The extremely local and rare parasitic bee, *Nomada armata,* also occurred in the same locality as the above insects; but Mr. Pascoe failed to discover the *Cœlioxys Vectis,* one of the most abundant insects when I last visited the Isle of Wight.

I stated, at the beginning of these Notes, that I had no species new to the British list to chronicle, and, strictly speaking, such is the fact; but I have to announce the probable discovery of a genus and species not hitherto recorded in our lists; its history is briefly told.

In October last, I visited Penzance; and, whilst there, met with an inhabitant who had on two or three occasions visited the insect-room at the British Museum; the lady requested the favour of my naming a few flies of her own capturing, principally in Cornwall; of course I was rejoiced to do so; when I received the box I saw, what I took at once to be a North American insect, a species of *Polistes.* I named the insects the night before I left, and queried the *Polistes,* as well as a species of *Bombus* having been taken in Cornwall; my correspondent's own words shall answer my doubts:—"The *Polistes* was caught alive, by myself, on the window-sill of our house, in the summer of 1866. This year I caught three more, about the same time, the last week in July and the first week in August, in the very same situation in the window of our house. Two of these are still in my possession,—the third, not wanting so many, I let go. Their languid movements, so much in contrast with their fierce appearance, their entire strangeness to me, and the fact of having caught them all in the same situation, led me to the conclusion, that they had probably been introduced in wood from a neighbouring dock-yard, which lies about a hundred yards below the windows of our house, but I did not know that they were foreign insects, till your notice of them apprised me of the fact."

It is at once evident that my correspondent supposes these wasps to be wood-boring insects: such is not the case, they are paper-makers, and construct their nest,—a single exposed comb, and attach it to trees, walls, posts, window-frames, &c., in fact, to anything suitable that is situated in a proper position for their purposes. The timber imported to Penzance is all cut into shape, and comes over, either in the form used for breastsummers for building purposes, or as boards, logs, &c.; untrimmed wood, I imagine, is never imported from America, so that it is difficult to imagine the introduction of these wasps by such means; a wasp might hide away in some hole or crevice, and so reach this country, but that they should do so two years in succession is not very probable. That a wasp imported should survive the winter at Penzance, when brought from a climate like that of N. America, is quite possible; and, also, that in the genial county of Cornwall they should establish themselves, is, to my mind, very probable.

My correspondent having taken the *Polistes* in 1866 proves nothing as to the time when, if imported at all, they were first introduced; in fact, so little has that part of the country been investigated, as to its Hymenopterous fauna, that I shall not be greatly surprised if I find a species of *Polistes* indigenous to that part of Cornwall. The common wasp of Europe, *Vespa vulgaris*, is found in N. America, and we may, therefore, hope to find a *Polistes* inhabiting both countries. (See Note at p. 96.)

The most interesting captures made in Suffolk were stylopized specimens of *Halictus abdominalis* and *H. obovata*, —these are the first examples of the larger species of the genus which I have seen so attacked; notwithstanding a most diligent search, I failed to obtain the male of the parasite; I found two bees from whose bodies it had emerged; and, judging from the size of the pupa cases remaining in the abdomen of the bee, I am satisfied of its being a much larger species than any of those that have been captured, and believed to have emerged from species of the genus *Halictus*. Younger students of Entomology, who have never seen stylopized bees, will readily detect the parasite, if the bees are carefully examined; they will observe a distortion, usually of the fourth upper abdominal segment; not invariably the fourth if there is more than one *Stylops* subsisting upon the bee; I have seen two under the third and one under the fourth, and possess several examples with one under each of those segments. When the protuberance is small, flattish, pale-coloured, and scale-like, it is the female of the parasite; should it be that of a male *Stylops*, it will be dark-coloured, black, or nearly so, and cylindrical in form; exactly resembling the apical portion of a Lepidopterous pupa case; of course, a miniature resemblance.

Of the stylopized *Halicti*, I took two males and four females. I do not, therefore, think the parasite can be rare in the vicinity of Lowestoft.

Several of the smaller species of *Halicti* have been observed to be attacked by these parasites: the *H. nitidiusculus* most frequently so; also *H. minutus*, *H. æratus*, and *H. quadrinotatus*; the genus *Halictophagus* is supposed to be the parasite of these smaller *Halicti*, but no Entomologist has succeeded in rearing the parasite from the bee. Mr. Dale captured *Halictophagus* in company with *H. æratus*, which is certainly strong presumptive evidence of their relationship. This parasite is very minute, not exceeding the twelfth of an inch in length; the species which attacked *H. rubicundus* and *H. obovata* must, certainly, belong to some new genus, or be a new and grand species of *Halictophagus.*

Judging from the great difference in the size of the females found imbedded in the bodies of the various *Andrenidæ* and *Halicti,* I am led to the conclusion, that we have yet much to discover in this most curious and interesting family of parasites. I have seen a British species of *Prosopis,* in whose abdomen a parasite had been nourished, and also a species of *Odynerus*, belonging to the *Vespidæ.*

Taking into consideration our present knowledge of the family of the *Stylopidæ*, we are somewhat startled when we read in the pages of the last work published on the "British Bees," by Mr. Shuckard, "their natural history is but imperfectly known, and I believe the males have not yet been discovered;" and in another passage we are informed, that "*Melöe* is the reputed parasite of the genus *Andrena*," whereas *Anthophora*, a genus belonging to the family of true bees, *Apidæ*, is the only insect upon which *Melöe* has been proved to be parasitic, and of which Mr. Newport published a most elaborate aud interesting account in the "Linnæan Transactions;" surely, the information quoted is sadly in the wake of our present knowledge of the subject.

Of all the genera of wild bees, we are perhaps best acquainted with the history of the *Bombi;* and yet, year by year, we are picking up additional facts in elucidation of it, a truth which teaches us that the study of Entomology is inexhaustible; and we feel convinced that the complete history of a species has yet to be written.

It is usual to place the Humble Bees in two divisions, one containing such species as construct their nests on the surface of the ground; the second division, those that excavate, or that take possession of some cavity underground. Such is the general rule, but, like all rules, it has its exceptions; surface builders sometimes take possession of the nests of birds, suspended in bushes, or attached to roofs or other parts of buildings.

Among the surface builders is ranked *Bombus sylvarum*; last summer I noticed numbers of this bee frequenting a clump of the dead-nettle, *Lamium purpureum*, and being anxious to find their nest, watched their homeward passage, great was my surprise on seeing them enter a hole in the ground, after the manner of *Bombus terrestris*. This was so interesting a circumstance, that I went the following day, provided with the necessary implements for digging out the nest. It proved to be about a foot underground: the cavity which contained the nest was about five inches in diameter, and was lined with a mixture of dried moss and grass; the community was small, there being seven females, six recently disclosed, and the parent bee, whose wings were either worn off, or had been clipped off by the workers; there were twenty-two males, and about forty workers; half-a-dozen females were still undeveloped, as were also about twenty workers. This is the first instance in which I have observed a surface-building bee occupying an underground nest.

During an entire month's collecting in Suffolk and Norfolk, I did not see a single surface-building *Bombus*, except *B. sylvarum*, whereas, in former years, I have seen them in abundance. I ascertained, on inquiry, that the spring and the early part of summer had been unusually cold and wet, which fully accounted for this scarcity.

An Entomological friend found the nest of one of the brown surface builders, constructed of cow's hair, but whence the bees had obtained it he could not ascertain. I have recorded the fact of one of these bees building with horsehair, in which instance the bees were observed collecting it from the currying of horses thrown into the loophole of a stable wall. My acquaintance also picked up a disabled *Bombus*, that had a specimen of the well-known Coleopterous insect —*Antherophagus nigricornis*—clinging to its palpi.

I have several times found *Antherophagus pallens* in the nest of *Bombus muscorum*, and have supposed it to have been attracted there by the store of honey; these beetles, being-flower frequenting species, are probably in the habit of attaching themselves to the bees when they are rifling the flowers of their sweets, and so get conveyed into their nests.

Mr. Packard informs us that the larvæ of *Bombi* are attacked by those of the genus *Melöe*, but he has not given any particulars of the development of the parasite, or whether any American Entomologist has traced the history of it, so as to confirm the statement satisfactorily. The *Bombi* are also said to be attacked by some species of *Stylops*, a circumstance not hitherto observed in Europe; it would be extremely interesting to ascertain the genus to which the parasite belongs.

Several interesting captures and observations have been made of different species of *Formicidæ*; of the *Myrmica unifasciata*, of which I possessed the only British example in this country, Mr. Pascoe took a specimen in the Isle of Wight, my own example having been found by Mr. Lewis, some years ago, at the land-slip, at no great distance from the spot where the second specimen was taken, and which has been liberally added to my collection. There were three or four specimens from the same locality in the cabinet of Mr. Curtis, which was purchased for the Melbourne Museum.

Ants' nests, and the myrmecophilous beetles found therein, have excited great zeal and assiduity, but principally on account of the rarity of some of the species, and the consequent natural desire of Coleopterists to add them to their collections. Not any Entomologist has, I believe, made any discovery whereby a clue to their relationship to the ants has been clearly ascertained. That they act the part of scavengers in those nests in which they are found is, I conceive, the most apparently reasonable conjecture. The majority of these are rarely found in any other situation, and appear to be entirely dependant upon the ants for support; *Claviger*, never seeing the light of day during its entire existence, has consequently no need of eyes to enable it to find its way from one situation to another.

But there are other connections equally obscure in many respects, namely, those existing between one species of ant and another which live in community. We know that certain species are found in the nests of the slave-making ant, *Formica sanguinea*, in whose nest we find most commonly, in the capacity of slavery, the *Formica fusca;* these are principally carried there in the pupa state, and are consequently born, as it were, part of the household; others are carried there by force, and appear soon to become contented, and to work in unison with the rest; but there are several other species found there which appear to be interlopers, living on sufferance, but allowed unmolested to rear their progeny in perfect security.

I have received from a young and most observant Hymenopterist, a list of species found in a nest of *F. sanguinea*, at Shirley; it is an extremely interesting record, and, I trust, Mr. Rothney will continue his observations on this subject; although I have repeatedly searched the nests of this slave-making ant, I never met with some of the species contained in the list.

"*Formica fusca*, common; *F. nigra* and *F. flava*, several specimens; *Tapinoma erratica; Myrmica ruginodis* and *M. scabrinodis*, common; *Myrmica lobicornis*, the workers very abundant, but only one female; *Leptothorax acervorum*, all the sexes abundant in August; *L. Nylanderi*, several specimens. No nest of *Formica fusca* or of *F. flava* could be found near that of the *F. sanguinea*, but those of *F. nigra*, *T. erratica*, *Myrmica ruginodis*, and *M. scabrinodis*, were all within the distance of a few yards." The *Leptothorax Nylanderi* has never been found in any other situation than in ants' nests, usually those of *Formica rufa*. I believe Mr. Rothney to be the first who has observed *Tapinoma erratica* and *L. Nylanderi* in the nest of the slave-making ant. Some of the species named, it will be observed, are only occasional inhabitants of the nests of other ants, others appear to be permanent ones; to the latter class belongs *Myrmica muscorum* found by Dr. Nylander in the nest of *F. rufa;* it is a very minute ant, and has probably been overlooked. Such species as appear to be constantly associated with other ants may probably be deprived, or may be, more correctly speaking, deficient of the instinct that prompts others to construct their own nests, or it may be, that they find some necessary aliment in the habitations of the species they are associated with. *Claviger*, it would appear, must be entirely dependant upon *Formica flava* for its subsistance, and this may also be the case with other species of insects.

Mr. Rothney observed a very interesting occurrence in the habits of *Formica fuliginosa;* the nests of this ant are extremely abundant in old oak trees at Barham, in Suffolk; two such trees were situated on the opposite sides of a gravel pathway, beneath which the ants had excavated a tunnel of communication.

Tetramorium cæspitum was found at Shirley; the only other locality I know of in the vicinity of London is at Plumstead Wood; this ant is much more abundant on the sea-coast.

Mr. Rothney found the rare bee *Cœlioxys quadridentata* plentifully at Ipswich. I have only taken it at Deal and in Yorkshire.

Many, like myself, have no doubt found it most pleasurable to visit some locality, rendered historic through the records of former Entomologists; amongst such, Mousehold Heath, near Norwich, is conspicuous; here, as Mr. Curtis informed me, Kirby, Marsham, Wilkin, as well as himself, had collected insects; it was in fact a favourite spot for that purpose with Curtis himself. Judging from the success I met with, on a visit of a few hours, I should be inclined to rank it very high as an Hymenopterous treasury. The elevated situation of the heath, its delightfully broken and hilly surface, backed on the north-west by a wood of pines; its many gravel-pits, some in operation, others long deserted, and left just in the right condition to attract fossorial insects; the extensive portions covered with the purple heath, intermixed in parts with bramble bushes and fern, altogether combine to make it just the locality that bees and fossorial *Hymenoptera* most delight in. A visit to this spot, at different periods of the season, would, I feel certain, amply repay any one inclined to investigate it fully. On the 24th of August, I there took specimens of the following *Hymenoptera*:—*Colletes succincta* and *C. Daviesana*; *Halictus rubicundus*, *H. abdominalis* and *H. flavipes*; *Andrena pubescens*, *A. tridentata*, *A. Afzeliella* and *A. convexiuscula*; *Nomada solidaginis* and *N. alternata*; *Epeolus variegatus*; *Miscus campestris*; *Tachytes pompiliformis*; *Mimesa bicolor* and *Cerceris labiata*.

NOTE.—Since the observations (pp. 87, 88) on the species of *Polistes* taken at Penzance were written, I have received two of the specimens, which I have carefully compared with all the species with which I am acquainted from North as well as from South America; the Cornwall specimens do not quite agree with any known species, but most closely resemble the *Polistes biguttatus* of Haliday; they are, however, rather larger, and have not the two yellow spots on the basal segment of the abdomen which characterize that species; the thorax is entirely ferruginous with the prothorax narrowly bordered, posteriorly, with yellow, and one specimen has a transverse line on the post-scutellum, and two longitudinal ones on the metathorax, yellow; in *P. biguttatus* the thorax is black with the exception of the sides of the prothorax, which is ferruginous. Under these circumstances I am inclined to wait the results of a further search for specimens next season before I refer it to any species either from North or South America, although I am inclined to the belief of its being a variety either of the *Polistes biguttatus*, or of *P. versicolor* from Brazil, a most abundant and also an extremely variable species. If the insect is an importation, it is an extremely difficult thing even to suggest the means by which it was conveyed to Penzance. I trust the coming season will afford the means of clearing up that which at present is involved in mystery; the most satisfactory elucidation would be the proof of its being an insect indigenous to Cornwall.

LEPIDOPTERA.

NOTES ON NEW AND RARE BRITISH LEPIDOPTERA (EXCEPTING TINEINA), IN 1867.

BY H. G. KNAGGS, M.D., F.L.S.

THE Entomologist who is apt to judge of the quality of a season by the number of "painted ladies," "deaths-heads," or other standards of excellence which may have come within his ken, naturally jumps to the conclusion that the past has been one of the very worst seasons upon record; and, like a true, but disappointed Briton, eases himself of a characteristic growl.

Now, in 1865 we heard comparatively very little grumbling, for "everybody" was up to his eyes with "deaths-heads" and "humming-bird moths," and yet our list of novelties then amounted to but three, one of which was so firmly regarded by its god-papa as an importation that he named it at starting after an Isle of Greece; while, as for the other two, neither Mr. Newman nor I can as yet get the public as a body to swallow either *B. perfumaria* or *A. mancuniata.* What a contrast in point of progress is presented by a comparison of that season with the one just passed! At any rate the following array of novelties does not look much like coming to a stand-still:—

1. *Naclia ancilla*, Linn. (Ent. Soc. Feb. 18).
2. *Fumea crassiorella*, Bruand (Ent. Mo. Mag. iv. 113).
3. *Polia nigrocincta*, Treit. (Ent. Mo. Mag. iv. 112).
4. *Acidalia osseata*, S. V. (Ent. Mo. Mag. iv. 161).
5. *Ebulea catalaunalis*, Dup. (Ent. Mo. Mag. iv. 152).
6. *Scoparia ulmella*, Dale (Ent. Mo. Mag. iii. 217).
7. *Scoparia ingratella*, Zell. (Ent. Mo. Mag. iv. 61).
8. *Catoptria aspidiscana*, Hüb. (Ent. Mo. Mag. iv. 16).
9. *Halonota ravulana*, H.-S. (Ent. Mo. Mag. iv. 61).
10. *Coccyx vernana*, Knaggs (Ent. Mo. Mag. iv. 122).
11. *Pterophorus Hodgkinsoni*, Gregson (Ent. Mo. Mag. iv. 38).

Eleven new British species! exclusive of certain Tineina, of which Mr. Stainton will render an account at another part of this volume. Besides which *Abraxas pantaria* (better than new) has been re-discovered by Mr. Gregson in the Isle of Man, and will have to be re-instated in the next editions of our lists; Mr. Butler has recorded the possibility of *Erebia Euryale* being a native of the Isle of Arran, and more than two or three Macros are still undetermined.

As regards discoveries of hitherto undetected larvæ, '67 does not suffer by comparison with previous seasons; and, though our list of local and scarce captures may not have been generally speaking up to the mark, some exceedingly interesting takes have nevertheless been put upon record.

Is it not something that *Sterrha sacraria* has become a naturalized British subject? This pretty species, which made its *débût* here some thirteen years ago, has now become generally distributed over the whole country, from Freshwater to Camachgouran, where three examples have been secured; but this is by no means the most curious point in the history of *Sterrha*, the astounding part of the business is, that, while all the captured specimens are all more or less typical of the species as occurring on the Continent, no one has yet been able to rear the ordinary form, all the bred specimens presenting striking peculiarities. It will be within the recollection of our readers that Mr. Hellins was successful in breeding half-a-dozen bewitchingly beautiful imagos, no two of which were alike, and no one of which bore a resemblance to the parent. More recently, indeed quite lately, Mr. Bond has exhibited at the Entomological Society a series—consisting of three females and five males, bred from eggs laid by two moths of the ordinary type, in all of which the ground colour is pale brown, very like that of *Lozogramma petraria*, but varying slightly in intensity; their oblique stripes are black, and in one or two only is there a faint indication of rosiness about the cilia. What *can* be the cause of this phenomenon? is it food? or climate? or —— what? It surely cannot be difference of brood, for *Sterrha* occurs at large in both spring and autumn. Then, again, *Camptogramma fluviata* and *Acidalia rubricata*, but a few years since great rarities, have now become, like *Sterrha*, of tolerably frequent occurrence, and the way in which they have gradually become acclimatized would doubtless, if properly investigated, prove highly instructive. It is in such cases as these that the chronicles of captures of scarce and local species are really serviceable, but to be of use they should also be complete, and this can only be effected by the cordial and general co-operation of British Lepidopterists as a body.

Since the publication of our last Annual, another example of *Xylina Zinckenii* has been put upon record, a welcome proof that the occurrence of the other was not "accidental." Fresh habitats have been detected for various species, among which the following are particularly worth mention. *T. scoliæforme* at Rannoch, and this opens up another field for operations; and with a knowledge of its habits, there seems to be no earthly reason why, in due course of time, it should not become a sufficiently common insect: already its cousin, *sphegiforme*, is gradually becoming understood, and finding its way into our cabinets. *T. philanthiforme* has been taken at Howth by Mr. Gregson, and there seems little doubt but that the species is very generally distributed. *Endromis versicolora* has turned up in some new localities; Mr. Chappell records that he in the previous season took *Nonagria elymi*, but declines to furnish the whereabouts; *Agrotis saucia*, after a considerable absence, seems to be turning up again "everywhere;" *Agrotis cinerea* on the Cotswolds; *Tæniocampa opima* in South Wales; *Dasycampa rubiginea* in various places at ivy and sallow bloom; *Dianthœcia capsophila* at Conway; *D. cæsia* in the South of Ireland; *Cucullia gnaphalii* at Tilgate; *Heliothis peltigera* in Surrey and South Wales, are all interesting occurrences. *Catocala promissa* too is stated to have been taken at Chelsea, but this seems scarcely credible. *Acidalia rubricata* has occurred in some numbers; *Macaria alternata* at Fairlight; *Eupithecia campanulata* in the Isle of Man; *E. irriguata* near Hastings; *Pempelia subornatella* at Howth, &c., &c. And besides these many other notable captures, such as *Deilephila livornica*, *Chærocampa nerii* and *Celerio*, *Glæa erythrocephala*, *Heliothis armigera*, *Ennomos alniaria*, *Madopa salicalis*, *Nascia cilialis*, with several local and scarce *Tortrices*, have been secured.

The varieties which have turned up during the past season possess considerable interest for those who take delight in these freaks of nature: one, a white-belted variety of *T. culiciforme*, is especially remarkable, the more so that it was taken *in copulâ* with an ordinary red-belted specimen.

LASIOCAMPA CALLUNÆ, Palmer, *versus* QUERCÛS, Linn.

At page 36, vol. iv. Ent. Mo. Mag. Mr. Bond records the fact of his having bred at any rate one decided specimen of *L. quercûs* from one of a number of pupæ of *B. callunæ*, received from Staffordshire. This individual, which with the rest passed the winter in the pupal state, differs in no respect from ordinary *L. quercûs* that have only passed a month or so as pupæ. The darker and stronger markings of *callunæ* cannot, therefore, be due to the longer duration of the pupal stage. Then too neither is so distinct from the other as *L. roboris* is from either. The subject is certainly one for further investigation.

TAPINOSTOLA BONDII, mihi, again.

Respecting this species my friend Mr. Doubleday thus quotes from a letter received from Professor Zeller: " After an examination of the figures and descriptions I cannot suppose it [*Bondii*] to be the *extrema* of Hübner. Treitschke (v. ii. 316), who saw the originals, says, that the cilia, though too darkly coloured, are *really dark*, as if singed, and adds that in the least marked specimens there is always a dark dot in the outer margin which is visible on the underside. Moreover, the *whole underside is white, sparingly dusted in the intervals of the prominent veins.* I hope that when I am in Vienna I shall see the specimens in the Museum and be able to inform you of the real difference of these two species."

This forms a most pleasant sequel to the Notes in last year's Annual, and I trust that my friend Bond will be remembered by his namesake for generations to come.

DIANTHŒCIA BARRETTII, Dbld., *versus* D. CONSPERSA, S.V.

Mr. Newman asks (Entom. 349), "Is not this [*Barrettii*] an Irish variety of *D. conspersa* afflicted with melanism like the Irish *Eupithecia venosata?* All the markings are exactly in the same place; the only difference is in the shade of colour." Further on, at p. 367, Mr. Kirby remarks, "On comparing our series of the two species, I am unable to perceive more than a vague resemblance of markings between the two insects. The shape and position of the pale markings do not correspond, nor are all these represented in both species." I well remember having it seriously pointed out to me that *D. cæsia* and *D. albimacula* were both varieties of *D. conspersa! Conspersa* must, indeed be a variable species.

ACIDALIA PINGUEDINATA, Zeller, *versus* A. MANCUNIATA, mihi.

Mr. Newman having been much pressed to give an opinion (Entom. 227) remarks, "Both the Lancashire insects are without question the *Acidalia pinguedinata* of Zeller, *mancuniata* being females, *veterata* males; if therefore any name be used to designate the supposed species, it must be the *pinguedinata* of Zeller; but after the fullest investigation I am able to give the subject, I am unable to find any character of larva, life-history or imago, by which either of the new species can be separated from *Acidalia subsericeata* of Haworth." I would remind the readers of the Annual that two years ago Mr. Buckler very clearly showed that the larva of *mancuniata* differed very considerably from that of *subsericeata*. Now, if *asbestaria* be a variety of *pinguedinata*, (see M. Guenée's work,) then the latter also should be a variety of *subsericeata*, for M. Millière has shown pretty conclusively that the larvæ of *subsericeata* and *asbestaria* are identical.

ACIDALIA INTERJECTARIA, Boisd., and OSSEATA, S. V.

It appears that the *osseata* of our cabinets (vide Stainton's "Manual") is the *interjectaria* of Boisd., or, according to Staudinger, the *dilutaria* of Hübner and Lederer. In making the above discovery Mr. Doubleday finds that we also possess the true *osseata*, of which an account will be given further on. By the way I made a stupid blunder (and I thank Mr. Doubleday for correcting me) in translating from M. Guenée's grand work the following: "*elle disparaît quand osseata commence.*" I hastily took it to refer to the species—not to time, and wrote off accordingly to M. Guenée " * * * *vous confirmiez l'opinion de M. Delaharpe que les deux (osseata et interjectaria) se confondent. Ici nous n'avons certainement aucune osseata laquelle est rouge sur les côtes. Voulez-vous avoir la bonté de me dire aussi exactement que possible quel couleur vous voulez indiquer par rouge?* * * *" to which M. Guenée briefly replied: "*Quant à l'osseata la côte est toujours rouge de la couleur à peu-près de vos timbres d'un 'penny.'*"

PYRAUSTA OSTRINALIS, Hüb., and P. PURPURALIS, Linn.

Of *Botys* (*Pyrausta*) *ostrinalis* Professor Zeller (Stett. Ent. Zeit. 1867, p. 189) remarks as follows: "That this is considered a distinct species has always surprised me. It is surely nothing more than a variety of *purpuralis*, with the ordinary form of which it flies and with which it is connected by the slightest transitions." Staudinger, too, in his Catalogue makes *ostrinalis* a variety of *purpuralis*.

◆

NEW BRITISH SPECIES IN 1867.

NACLIA ANCILLA, Linn.

AN example of this singularly interesting species has been captured at Worthing, by Mr. Wildman, on whose behalf it was exhibited, by Mr. Newman, at the second February Meeting of the Entomological Society of London.

Herrich-Schäffer's family *Syntomides* contains the two genera *Syntomis* and *Naclia:* these appear to be a connecting link between the *Zygænidæ* and *Lithosidæ.*

There is something about *Naclia* that reminds one forcibly of *Heterogenea asellus*, and it may be well to consider whether the latter should not come in our cabinets with *Naclia* after the *Zygænidæ.*

The expanse of the fore wings of the male *N. ancilla* is about three-fourths of an inch; the fore-wings are dull brown, with a slightly diaphanous appearance, and without any spots or markings; the hind-wings are dull yellowish, being dark along the hind margin, especially towards the apical angle, and with a dark mark from the discoidal cell to the costa; abdomen ochreous, with dark dorsal dots on the segments.

The female expands from an inch to an inch and a quarter; the fore-wings are pale brown, with three white spots arranged in a direction parallel to the apical margin, the two lowermost being close together; the hind wings are darker, and without apparent markings; abdomen ochreous-yellow; antennæ simple and pointed in both sexes.

A species (*N. depunctata*) comes very close to it, but its colours are brighter; it is more thickly clothed, and the fore-wings of the male are spotted, and it has spots towards the base of the wing. These two species appear to have got mixed up in the National collection.

FUMEA CRASSIORELLA, Bruand.

At page 113, vol. iv. of the Entomologist's Monthly Magazine, my friend Mr. Bond thus records the discovery of this interesting little novelty: "I have seen several specimens of a *Fumea* this year, which proves to be *F. crassiorella*, Bruand. The ♂s are larger than either *F. nitidella* or *roboricolella*, to which group they belong. The ♀ is also larger and more obese. I have had males in my cabinet for some time, but it was only this year, by breeding the females, that I was enabled to make out the species; there are good figures in Bruand's Monograph, fig. 68, *a* ♂, *b* ♀ plate 2."

At page 133 of the same periodical I have recorded the occurrence of this *Fumea* at Hornsey Wood, where my son and I took a number of cases in a short time, from which, in due course, the perfect insects (♂s and ♀s) emerged. The species has been bred by Mr. Mitford, and also by Mr. Greening, to whom I sent a supply of cases.

POLIA NIGROCINCTA, Treitschke (Fig. 1).

For this handsome addition to our *Noctuina* we are indebted to Mr. Greening, who thus records its occurrence in the pages of "The Entomologist's Monthly Magazine" (vol. iv. 112): "On Tuesday (Aug. 22), I had the pleasure of breeding a new British *Noctua*. The larva from which I bred it fed on *Silene*, and was quite new to me; and when the moth emerged I felt positive that it was a fine addition to our lists. Mr. Doubleday, to whom I have sent the specimen, informs me that it is *Polia nigrocincta*." It is most interesting that Mr. Greening should have had the pleasure of first making acquaintance with the larva, and he has shown his usual acumen in predicting his captured larva to be that of a species new to us, for there are few, if any, Lepidopterists in this country who have a better eye for specific distinctions than the gentleman in question.

Mr. Hopley (Ent. Mo. Mag. vol. iv. p. 132), too, records the occurrence of another specimen (a ♀), which was taken by Mrs. Fisher, by daylight, from off the window of a lighthouse in Cornwall, about the middle of August, 1862. This interesting example, which Mr. Hopley had placed at the head of his series of *P. flavicincta*, as a strange variety of that species, had been unhesitatingly pronounced by Mr. Greening, who saw it some year or so ago, to be altogether new to our lists.

Polia nigrocincta is placed by Dr. Staudinger between *flavicincta*, S. V., and *chi*, Linn., *ruficincta*, Hüb., and *cærulescens*, Boisd., intervening between it and the former, *argillaceago*, Hüb., *canescens*, Boisd., and *suda*, Hüb., between it and the latter. In general cut, as well as in the characters of the hind-wings, it appears to me to be more nearly related to *chi* than to *flavicincta*. The fore-wings in colouration remind one of those of *flavicincta*, though they have more the cut of *chi*, but the hind-wings of the male bear great resemblance to those of *chi*, though they are more strongly marked at the margin; the hind-wings of the female are darker than in *chi* ♀, and have white cilia.

M. Guenée also places it between *flavicincta* and *chi*, with some species intervening. He remarks that it is as common as, but less generally distributed than, *flavicincta*, that its time of appearance is July and August, and that it varies excessively. It will be seen from the figure given at the commencement of this volume that Mr. Greening's example (a ♂), is a variety in which a black central shade is very evident.

ACIDALIA OSSEATA, S. V.

It appearing that we have two species under this name in our cabinets, and that *interjectaria* is the one which has hitherto been known to us by the name of *osseata* (vide description in Stainton's Manual), the true *osseata* (as well as *interjectaria*) is now admitted to our lists upon the authority of Mr. Doubleday, who thus writes concerning it at p. 161, vol. iv. Ent. Mo. Mag.: "*Acidalia osseata* is rare here, and I only know of one spot where it occurs. Specimens taken a few years since, which were evidently very fresh, had the costa decidedly ferruginous; but this colour faded soon after they were dead, as it does in some *Eupitheciæ*, &c. The ground colour of the wings was also yellower than in any specimens of *interjectaria* that I have seen."

"The late J. F. Stephens mentions the red costa of *osseata* in his 'Illustrations,' but, as is well known, many of his descriptions were copied, without acknowledgment, from the works of continental authors."

* * * * * *

M. Guenée has stated very decidedly that in *osseata* the costa is always "*rouge*," a colour which he likens to that of an English penny postage-stamp or thereabouts—somewhat that of the ground colour of *Hyria auroraria* in point of fact. But still in the National collection (although two other species are mixed up with *osseata*) specimens purchased from the late Mr. Becker, and coming from Germany, though not unlike *interjectaria* are certainly brighter (say tiger-coloured) on the costa than our specimens, and Italian examples presented by Dr. Leach have also ferruginous costæ, the other part of the wings being almost without markings; the latter specimens, too, seem a trifle larger.

I anxiously await the fulfilment of M. Guenée's kind promise to forward me the typical *osseata*.

EBULEA CATALAUNALIS, Dup. (Fig. 4).

At page 152, vol. iv. Entomologist's Monthly Magazine, Mr. W. C. Boyd thus writes, "I captured it in our garden at Cheshunt, September 18th, flying over a flower-bed in the dusk of the evening. I should probably not have paid much attention to it, taking it to be only *P. forficalis*, which was extremely abundant that evening, if I had not been struck with its peculiar flight, hovering backwards and forwards more like the common house-fly than anything else I know."

Ebulea catalaunalis has been before reputed British, but erroneously, it having been supposed synonymous with *Nascia cilialis*, Hüb.

This species at first sight is not very dissimilar from *Botys ferrugalis*, and is about the same size. But if one imagines a small sharp and narrow-winged *N. cilialis*, a much better idea of it is gathered. Owing to the paleness of the ground colour, the insect has a rather worn appearance, even in fine specimens. The ground colour of the fore-wings is pale sulphur, the nervures being mapped out with ferruginous, an accumulation of which tint occurs towards the hind margin: at the base of the cilia is a dark, almost black line; the fringes themselves are cream-coloured: the hind-wings are whitish, but ferruginous towards the hind margin, especially near the apex. Abdomen and antennæ long. Sexes very much alike.

E. catalaunalis is an European species, but has also occurred in India, those from the latter country presenting no points of difference.

It is scarcely a true *Ebulea*, but as most of the characters agree with the members of that genus, it has not been considered advisable to erect a new genus for its reception.

SCOPARIA ULMELLA, Dale.

Under Mr. Dale's manuscript name of *ulmella*, I have endeavoured at page 217, vol. iii. of the Entomologist's Monthly Magazine, to characterize a hitherto unacknowledged *new Scoparia;* three examples of which were taken by Mr. Dale himself many years ago at East Meon.

S. ulmella bears some affinity to *S. dubitalis*, chiefly by reason of the 8-mark being dumb-bell-shaped, and filled in with ochreous, but its slender conformation precludes the possibility of its being connected with that species. The characters of the 8-mark separate it from the *mercurella* group—and it is with equal ease distinguished from the *angustea* group by the character of the first line.

The time of appearance of this rather anomalous creature is toward the middle of July.

SCOPARIA INGRATELLA, Zeller.

At page 61 of the Entomologist's Monthly Magazine, vol. iv. I have brought forward this species as an inhabitant of the Folkestone Warren, on the authority of Dr. Staudinger of Dresden. The insect is certainly the *ingratella* of the Continent, and closely allied to *S. dubitalis*, which is an excessively variable species, and from which it differs in size, being larger; in the black markings being absent or very faint; and also in its habits, the habit of *ingratella*, in its Folkestone haunts at any rate, being to rest on lumps of chalk, &c., &c. I had for some time suspected it to be distinct from *dubitalis*. It is easily disturbed by day in June and July, and is rather abundant.

CATOPTRIA ASPIDISCANA, Hüb.

Mr. Hodgkinson writes (Ent. Mo. Mag., vol. iv. p. 16), that he has taken this species for some years flying in company with *Eriopsela quadrana*. The captures have been identified by Mr. Doubleday. *C. aspidiscana* is, I believe, a very variable species; but not having at present had the advantage of seeing a long series, I can only judge of it from two specimens kindly presented to me by my old friend, Mr. Harrison of Manchester. These appear to be excessively closely related to the insect which goes in our cabinets by the name *Catoptria modestana*, H.-S. (dark variety), another exceedingly variable species.

By the way Dr. Staudinger gives *modestana*, H.-S., as a synonym of *modicana*, Zell., bringing it in, in the subgenus *Pædisca*, soon after *Hohenwartiana*, while he places *aspidiscana* with *Scopoliana*, *hypericana*, &c., further on in the subgenus *Grapholitha*.

HALONOTA (*Grapholitha*), RAVULANA, H.-S. (Fig. 2).

This little novelty, which has been discovered in this country by Mr. E. G. Meek, appears to be most nearly related to *Halonota obscurana*, H.-S., of which it is about the size. The ground colour of the fore-wings is blackish, with a bluish tint, mottled, and indistinctly traversed by blacker lines and *strigæ*; towards the hind-margin is a cluster of short black longitudinal lines. The dorsal patch is white and dusted with scales transversely in such a manner that these, in fine specimens, assume the form of indistinct lines. The costal dots are pale and indistinct, and towards the apex three or four blacker spots are noticed on the costa. It is a difficult insect to describe, and the figure in our plate will give a better idea than can be conveyed by words.

One example of *ravulana* was secured by Mr. Meek in 1866; but last June, by beating undergrowth in Darenth Wood, he obtained several more. I am indebted to Drs. Staudinger and Wocke for furnishing me with the name of this species. (See Ent. Mo. Mag. vol. iv. p. 61.)

COCCYX VERNANA, mihi.

This obscure little *Coccyx*, which reminds one very much of a small dark narrow-winged variety of *C. argyrana*, was brought forward in the Entomologist's Monthly Magazine, vol. iv. p. 122.

Three specimens of it were captured by Mr. E. G. Meek, in Darenth Wood, towards the end of March, 1866. Mr. Meek says that its habits are similar to those of *C. splendidulana*, and that it appears about a month sooner than *argyrana*.

PTEROPHORUS HODGKINSONI, Gregson.

Of this, Mr. Hodgkinson (Ent. Mo. Mag. vol. iv. p. 38), observes that he captured eight examples at Witherslack, and adds, "I took three specimens in 1863; it appears to be a very early species, and this may account for my not meeting with it since 1863, as I seldom go there so early in the season. Any one who has been in the habit of looking at plumes, may readily see the difference when the insect is at rest. Four of the specimens are very fine; I obtained a few eggs. The species is closely allied to *P. Loewii.*"

A Table of Local and Scarce British Lepidoptera for 1867.

(Arrangement of "Stainton's Manual.")

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Colias Edusa (var. Helice)	Margate	H. R. Cox	August	E. M. M. 132	In a clover field.
„ „	Folkestone	H. Ullyett	Aug. 14	E. M. M. 133	
„ hyale	Margate	H. R. Cox	August	E. M. M. 132	In a clover field.
Leucophasia sinapis	Coggeshall	W. H. Harwood	...	In litt.	
Erebia Epiphron	Rannoch	J. & J. B. Blackburn	August	E. M. M. 139	At 1000 feet elevation.
Limenitis sibilla	Haslemere	C. G. Barrett	May	E. M. M. 13	Several larvæ found.
Lycæna Artaxerxes	Perth	J. Stewart	July	Dr. B. W. in litt.	Very scarce.
„ Arion	Gloucester	H. W. Marsden	July 20	Entom. 314	
Thecla betulæ	Essex	T. Eedle	July	T. E. in litt.	
„ „	...	A. Edmonds	...	In litt.	Bred.
Procris Geryon	Cotswolds	Rev. E. H. Todd	May 24	E. M. M. 184	
„ „	Cotswolds	Rev. H. Roberts	June (e.)	E. M. M. 187	Near Broadway, Beacon.
Acherontia Atropos	Perth	...	...	Dr. B. W. in litt.	One specimen.
Sphinx convolvuli	Perth	"A boy"	Sept.	Dr. B. W. in litt.	In the middle of the town.
Deilephila lineata	Haslemere	Miss R. Chandler	May 11	E. M. M. 12	Flying over lilac.
„ „	Ventnor	J. Keet	...	Entom. 288	At light.
„ „	Brighton	...	May 15	Entom. 289	At rest, and three others.
Chœrocampa nerii	Sheffield	...	Sept. 14	Entom. 363	Recorded by W. Hydes.
„ celerio	Coggeshall	H. Lawrence			
„ „	Isle of Wight	J. Ingram	Autumn	E. M. M. 213	Seen at ivy.
„ „	Ipswich	...	Aug. 28	Entom. 345	At rest, 6 p.m.
„ „	Isle of Wight	W. M. Frost	Sept. 21	Entom. 354	Came to light.
„ „	Taunton	W. Bidgood	Sept. 17	Entom. 263	At light.
„ porcellus	Perth	J. Stewart	June	Dr. B. W. in litt.	Bred—larvæ found also.
Trochilium chrysidiforme	Folkestone	E. G. Meek	June, 1866	E. M. M. 13	Larvæ discovered in roots of sorrel and dock. Bred.
„ sphegiforme	Tilgate	E. G. Meek	June	In litt.	Scarce. Bred and captured.
„ scoliæforme	Rannoch	B. Cooke	July 15	Entom. 314	A fine ♀.

Trochilium philanthiforme	Isle of Man	E. Birchall	June	Entom. 312	Flying in sunshine.
„ „	Howth	C. S. Gregson	June & July	E. M. M. 70	New locality.
Dicranura furcula	Rannoch	T. & J. B. Blackburn	August	E. M. M. 139	Young larvæ abundant.
„ „	Colchester	W. H. Harwood		In litt.	Larvæ also taken.
„ „	Tilgate	E. G. Meek	Sept.	In litt.	Larvæ on sallow.
Drymonia chaonia	Colchester	W. H. Harwood		In litt.	A number of larvæ.
„ dodonæa	Ipswich	T. Last		Entom. 189	Bred.
„ „	Colchester	W. H. Harwood		In litt.	Several larvæ.
Leiocampa dictæoides	South Wales	J. T. D. Llewelyn	April	E. M. M. 263	New locality.
„ „	Near Gravesend	H. Vaughan	Sept.	In litt.	Larvæ on birch.
„ „	Colchester	W. H. Harwood		In litt.	
Philodontis palpina	Kentish Town	H. Vaughan	June	In litt.	At light.
Lophopteryx carmelita	Haslemere	C. G. Barrett	April 30	E. M. M. 12	A lovely pair.
Peridea trepida	Colchester	W. H. Harwood		In litt.	And about a dozen larvæ.
Clostera curtula	Colchester	W. H. Harwood		In litt.	Larvæ not scarce.
Lælia cœnosa	"The Fens"	T. Eedle	August	In litt.	
Lithosia helvola	Box Hill	P. C. Wormald	July & Aug.	In litt.	About a dozen from yew, &c.
„ stramineola	Headley Lane	W. Rogers	Aug. 12	In litt.	By beating.
„ „	"The Fens"	T. Eedle	August	In litt.	
„ complana	Dartford Heath	P. C. Wormald	July 25	In litt.	23 specimens on "Baldwyn's fence."
„ „	Shirley	H. Vaughan	July & Aug.	In litt.	Mothing on the heath.
„ caniola	Howth	E. Birchall		In litt.	
„ pygmæola	Deal	H. J. Harding		Entom. 354	Several specimens.
„ quadra	Woolmer F.	C. G. Barrett	July	In litt.	Beaten from oak.
Nudaria senex	"The Fens"	T. Eedle	August	In litt.	
„ „	Near York	T. J. Carrington	July 14	In litt.	
Spilosoma urticæ	Essex	T. Eedle	June	In litt.	
Endromis versicolora	Worcestershire	E. S. Haines	June 3	E. M. M. 64	In the larval state.
„ „	Petersfield	F. Bond	May 5	E. M. M. 12	New locality.
„ „	Ipswich	T. Last			Five ♂s flying.
Drepana hamula	Dulwich	J. P. Barrett			At light.
„ „	Hampstead	P. C. Wormald	June 6	In litt.	
„ unguicula	Epping	P. C. Wormald	July 20	In litt.	Several by beating beech.
Psyche opacella	Woolmer F.	C. G. Barrett	May	In litt.	Cases on oak trees.
„ calvella	Rannoch	T. & J. B. Blackburn	August	E. M. M. 139	New locality.
„ „	Hampstead	R. McLachlan	May 14	E. M. M. 69	A few cases.
Fumea radiella	Near Gravesend	H. Vaughan	June	In litt.	New locality?

Local and Scarce British Lepidoptera for 1867—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Limacodes asellus ...	Loughton? ...	T. Eedle ...	June ...	E. M. M. 69	
,, testudo ...	Guestling ...	Rev. E. N. Bloomfield	June (b.) ...	E. M. M. 207 ...	One specimen.
,, ,, ...	Woolmer F. ...	C. G. Barrett ...	July ...	In litt. ...	Flying by day among oak.
Cymatophora fluctuosa ...	Guestling ...	Rev. E. N. Bloomfield	June (b.) ...	E. M. M. 207 ...	One specimen.
,, ...	Kent	T. Eedle ...	July ...	In litt.	
,, or ,, ...	Near Hastings ...	Rev. E. N. Bloomfield	June 12 ...	In litt. ...	One at sugar.
,, ocularis ...	Worcester ...	A. Edmunds ...	May, 1866 ...	E. M. M. 185 ...	Bred.
,, ridens ...	Guestling ...	Rev. E. N. Bloomfield	April 23 ...	E. M. M. 206 ...	One at rest, another at sugar.
Diphthera orion ...	Ipswich ...	T. Last	...	Entom. 189 ...	Nine taken.
,, ,, ...	Colchester ...	W. H. Harwood ...	...	In litt. ...	About a dozen larvæ
Acronycta tridens ...	Haslemere ...	C. G. Barrett ...	...	In litt. ...	Bred.
,, leporina ...	Tilgate ...	E. G. Meek ...	Sept. ...	In litt. ...	Larvæ on birch.
,, ,, ...	Near Hastings ...	Rev. E. N. Bloomfield	June 1 ...	In litt.	
,, ,, ...	Worcester ...	A. Edmunds ...	...	In litt.	
Leucania straminea ...	Herne Bay ...	C. J. Buckmaster...	Aug. (e.) ...	E. M. M. 133 ...	Pretty common.
,, ,, ...	Ipswich ...	T. Last	...	Entom. 189	
Tapinostola Bondii ...	Folkestone ...	H. Vaughan ...	July ...	In litt. ...	Towards Sandgate
Nonagria elymi ...	... ...	J. Chappell ...	Last season	E. M. M. 206 ...	No locality given.
Senta ulvæ	Ipswich ...	T. Last	...	Entom. 189	
Xylophasia scolopacina	Colchester ...	W. H. Harwood ...	...	In litt.	
Xylomyges conspicillaris	Worcester ...	Rev. E. H. Todd ...	March (e.) ...	E. M. M. 184 ...	Bred from a pupa dug.
,, ,, ...	Worcester ...	Rev. E. Horton ...	April 26 ...	E. M. M. 16 ...	Bred.
Aporophila australis ...	Deal	H. J. Harding ...	...	Entom. 354 ...	Freely at sugar.
Luperina cæspitis ...	Cotswolds ...	Rev. E. H. Todd ...	...	...	At light.
,, ,, ...	Colchester ...	W. H. Harwood ...	...	In litt.	
Mamestra albicolon ...	Wallasey ...	E. L. Ragonot ...	...	In litt. ...	Several at sugar.
...	South Wales ...	J. T. D. Llewelyn...	June ...	E. M. M. 263	

Apamea ophiogramma	Near London	T. Eedle	June	In litt.	
Agrotis saucia	Perth	J. Stewart	October	Dr. B. W. in litt.	At sugar.
" "	Worcester	A. Edmunds		In litt.	
" "	Exeter	H. D'Orville	Aug. & Sept.	Rev. J. H. in litt.	At sugar.
" "	Bidston	E. L. Ragonot		In litt.	A fine series at reed flowers.
" "	Haslemere	C. G. Barrett	Sept.	In litt.	Beaten from thatch.
" "	Colchester	W. H. Harwood	Sept. ?	In litt.	
" cinerea	Cotswolds	Rev. E. H. Todd		E. M. M. 210	Two at light.
" ripæ	South Wales	J. T. D. Llewelyn	July	E. M. M. 263	New locality.
" cursoria	Birkenhead	F. L. Ragonot		In litt.	Common.
" obelisca	Cotswolds	Rev. E. H. Todd		E. M. M. 210	
" præcox	South Wales	J. T. D. Llewelyn	July	E. M. M. 263	
" "	Crosby	E. L. Ragonot		In litt.	Good series ; large specimens.
" agathina	Near York	T. J. Carrington	Aug. 24	In litt.	
" ravida	Cotswolds	Rev. E. H. Todd		E. M. M. 210	
" pyrophila	Northleach	Rev. E. H. Todd		Entom. 203	At sugar: also recorded in E. M. M.
Noctua dahlii	Hastings	Rev. E. N. Bloomfield	Aug. 9	In litt.	Also several 2 years ago.
" "	Ipswich	T. Last		Entom. 189	One.
Tæniocampa leucographa	Croydon	C. J. Buckmaster	March	E. M. M. 68	At sallows.
" opima	Birkenhead	E. L. Ragonot		In litt.	Two at sallows.
" "	South Wales	J. T. D. Llewelyn	April	E. M. M. 263	New locality.
" "	Near York	T. J. Carrington	April 5	In litt.	Several at sallows.
" populeti	Croydon	C. J. Buckmaster	April 4	E. M. M. 68	At sallows.
" "	Worcester	A. Edmunds		In litt.	Three bred.
" "	Near York	T. J. Carrington	April 18	In litt.	Several at sallows.
" miniosa	Hastings	Rev. E. N. Bloomfield	April 3	In litt.	Three at sallows.
" "	Darenth	E. G. Meek	April	In litt.	At sallows.
" "	Haslemere	C. G. Barrett	April	In litt.	At sallows.
Glæa erythrocephala	Canterbury	—— Parry		Entom. 228	Five specimens.
Dasycampa rubiginea	Exeter	Rev. J. Hellins		In litt.	One at sallows.
" "	Isle of Wight	J. Ingram	Spring	E. M. M. 213	Two at sallows.
" "	Bristol	A. E. Hudd	Oct. 27 & 30	E. M. M. 186	At ivy bloom.
" "	Isle of Wight	J. Ingram	Autumn	E. M. M. 213	Six at ivy bloom.
Hoporina croceago	Clapham	W. Rogers	Oct. 18	In litt.	At ivy.
" "	Croydon	J. B. Blackburn	March	E. M. M. 68	At sallows.

Local and Scarce British Lepidoptera for 1867—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Hoporina croceago	Guestling	Rev. E. N. Bloomfield	March 28	E. M. M. 206	A few at sallows.
" "	Darenth	E. G. Meek	April	In litt.	At sallows.
Xanthia aurago	Dorking	Hon. S. Canning		E. M. M. 208	At sugar.
" "	Bristol	A. E. Hudd	Oct. 27 & 30	E. M. M. 186	Two or three at ivy.
Cirrhædia xerampelina	Worcester	A. Edmunds	August	E. M. M. 185	Bred.
" "	Ipswich	T. Last		Entom. 189	
Tethea retusa	Exeter	Rev. J. Hellins		In litt.	Larvæ taken.
" "	South Wales	J. T. D. Llewelyn		E. M. M. 92	
" "	Worcester	A. Edmunds		In litt.	Bred one specimen.
" subtusa	Kew	P. C. Wormald	July	In litt.	Also by J.S.Pryer, at Highgate.
Cosmia pyralina	Saxmundham	Rev. E. N. Bloomfield	July 16	In litt.	Bred.
Eremobia ochroleuca	Herne Bay	H. Vaughan	August	In litt.	At teasel and other flowers.
Dianthæcia capsophila	Howth	W. F. Kirby	June 27	E. M. M. 90	One specimen.
" "	Howth	E. Birchall	June	In litt.	Also at Douglas.
" "	Isle of Man	H. Vaughan	June 27	E. M. M. 68	Larva again in 1867.
" "	Conway	J. Chappell	June	E. M. M. 206	Bred.
" Barrettii	Howth	W. F. Kirby	June 27	E. M. M. 90	Six specimens.
" "	Howth	E. Birchall	June	Entom. 301	
" cæsia	South of Ireland	W. Wright	July	E. M. M. 91	New locality.
" "	Douglas	E. Birchall	June	In litt.	
Epunda lutulenta	Surrey	T. Eedle	August	In litt.	
" viminalis	Battersea	W. Rogers	June	In litt.	Larvæ taken.
Phlogophora empyrea	Near Lewes	G. H. Verrall		Verb. com.	Scarce.
Aplecta occulta	Rannoch	T.& J. B. Blackburn	August	E. M. M. 139	By searching stumps.
" "	South Wales	J. T. D. Llewelyn	July	E. M. M. 263	New locality.
" tincta	Addington	W. Rogers	July 12	In litt.	Off the Bishop's fence.
" "	Hastings	Rev. E. N. Bloomfield	June 13	In litt.	One at sugar.
Hadena genistæ	Addington	W. Rogers	June 28	In litt.	Off the Bishop's fence.
" suasa	Worcester	A. Edmunds		In litt.	
Xylina Zinckenii	Near Dorking	Hon. S. Canning	October, 1866	E. M. M. 285	At sugar.

Xylina semibrunnea	Worcester	A. Edmunds	October, 1866	E. M. M. 185	At sugar.
„ „	Bristol	A. E. Hudd	October, 1866	E. M. M. 186	A few at ivy.
Cucullia scrophulariæ	Ponder's End	H. Vaughan	July	In litt.	Larvæ on scrophularia.
„ asteris	Tilgate	E. G. Meek	Sept.	In litt.	Bred.
„ gnaphalii	Tilgate	E. G. Meek	June 2	E. M. M. 114	Larva taken last autumn.
„ chamomillæ	Worcester	A. Edmunds	July, 1866	E. M. M. 185	New locality.
„ „	Bidston	F. Archer		E. L. R. in litt.	At light.
Heliothis armigera	Babbicombe	T. Terry	Oct. 16	E. M. M. 140	Two at ivy.
„ peltigera	Haslemere	C. G. Barrett	Aug. 22	E. M. M. 160	In a clover field.
„ „	South Wales	J. T. D. Llewelyn	July 22	E. M. M. 91	On the sand hills.
„ dipsacea	Cotswolds	Rev. E. H. Todd	June 22	E. M. M. 184	Flying in sun over flowers.
Agrophila sulphuralis	Bury	J. W. Whelan	June	E. M. M. 186	Three specimens.
Acontia luctuosa	Cotswolds	Rev. E. H. Todd	June, 1866	E. M. M. 184	Over thyme.
„ „	Bury	Rev. A. H. Wratislau		Entom. 199	One.
„ „	Near Gravesend	H. Vaughan	June	E. M. M.	One, a fine variety.
„ „	Surrey	T. Eedle	June	In litt.	
Erastria venustula	Loughton ?	T. Eedle	June	E. M. M. 69	
Hydrelia unca	South Wales	J. T. D. Llewelyn	May	E. M. M. 263	
„ „	Near York	T. J. Carrington	July 4	In litt.	
Brephos notha	Ipswich	T. Last		Entom. 189	Thirteen specimens.
Plusia bractea	Perth	J. Stewart	July	Dr. B. W. in litt.	Also by W. Herd.
„ interrogationis	Rannoch	T. & J. B. Blackburn	August	E. M. M. 139	Flying at flowers.
„ „	Perth	J. Stewart		Dr. B. W. in litt.	Also by G. J. Bruce.
Stilbia anomala	Ilfracombe	J. S. Masterman		G. B. L. in litt.	
„ „	Rannoch	T. & J. B. Blackburn	August	E. M. M. 139	New locality.
Catocala promissa ?	Chelsea	C. B. Walland	Aug. 21	Entom. 350	? C. nupta.
Eurymene dolabraria	Hampstead	H. Vaughan	June	In litt.	Flying at dusk.
„ „	Ipswich	T. Last		Entom. 189	One.
„ „	Croydon	J. P. Barrett		Entom. 330	Also at Epping.
Pericallia syringaria	Dorking	Hon. S. Canning		E. M. M. 208	In lanes.
„ „		P. C. Wormald			
„ „	Colchester	W. H. Harwood		In litt.	One specimen.
„ „	Haslemere	C. G. Barrett	May	E. M. M. 160	Larvæ and pupæ.
Selenia lunaria	South Wales	J. T. D. Llewelyn	May	E. M. M. 263	
„ „	Worcester	A. Edmunds		In litt.	Bred.
„ „	Guestling	Rev. E. N. Bloomfield	June (b.)	E. M. M. 207	One specimen.

Local and Scarce British Lepidoptera for 1867—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Selenia lunaria	Essex	T. Eedle	June	In litt.	
,, illustraria	Edmonton	J. W. Downing	May	E. M. M. 15	New locality.
,, ,,	Malvern	Rev. E. H. Todd	Aug. 15	E. M. M. 210	One.
,, ,,	South Wales	J. T. D. Llewelyn	May	E. M. M. 268	
,, ,,	Wimbledon	J. B. Blackburn	May	E. M. M. 68	
Ennomos alniaria	Deal	H. J. Harding	...	Entom. 354	Another ♂ at light.
,, tiliaria	Kildare County	Hon. E. Lawless	August	E. M. M. 187	New to Ireland.
,, fuscantaria	Dorking	Hon. S. Canning	...	E. M. M. 208	
,, ,,	Peckham	J. P. Barrett	...	Entom. 189	At light.
,, ,,	Colchester	W. H. Harwood	...	In litt.	Several specimens.
,, ,,	Surrey	T. Eedle	Sept.	In litt.	
,, erosaria	Colchester	W. H. Harwood	...	In litt.	Five or six.
Nyssia hispidaria	Richmond	S. A. Davis	Feb. 9	E. M. M. 263	Rather early.
Boarmia abietaria	Surrey	T. Eedle	June	In litt.	
,, consortaria	Kent	T. Eedle	July	In litt.	
Tephrosia extersaria	Guestling	Rev. E. N. Bloomfield	June 15	E. M. M. 207	One specimen.
,, ,,	Worcester	A. Edmunds	June?	In litt.	Five specimens.
Dasydia obfuscata	Rannoch	T. & J. B. Blackburn	August	E. M. M. 139	Rather plentifully at flowers.
Psodos trepidaria	Rannoch	T. & J. B. Blackburn	August	E. M. M. 139	On mountain tops.
Geometra papilionaria	Perth	W. Herd	August	Dr. B. W. in litt.	
,, ,,	Worcester	A. Edmunds	...	In litt.	Bred.
,, ,,	Croydon	W. H. Morris	July	H. V. in litt.	Flying at dusk.
,, ,,	Colchester	W. H. Harwood	...	In litt.	
Iodis vernaria	Croydon	H. Vaughan	July	In litt.	Amongst clematis.
,, ,,	Malvern	Rev. E. H. Todd	July 11	E. M. M. 210	Larvæ found also.
Phorodesma bajularia	Dorking	Hon. S. Canning	...	E. M. M. 208	In lanes.
,, ,,	Colchester	W. H. Harwood	...	In litt.	
,, ,,	Guestling	Rev. E. N. Bloomfield	June 29	E. M. M. 307	One.
Ephyra orbicularia	Haslemere	C. G. Barrett	May	In litt.	Flying at dusk.
,, ,,	Worcester?	A. Edmunds	...	In litt.	Bred.
Asthena blomeraria	Cotswolds	Rev. H. Roberts	June (e)	E. M. M. 187	At rest on a lamp.

Acidalia rubricata	Bury	Rev. A. H. Wratislau		Entom. 189	Rare.
„ trigeminata	Loughton	H. Vaughan	June	In litt.	Flying at dusk.
„ circellata	Manchester	C. Campbell	Aug. 15	E. M. M. 132	Bred from the eggs.
„ subsericeata	Guestling	Rev. E. N. Bloomfield	June	In litt.	Not uncommon.
„ „	Loughton	H. Vaughan	June	In litt.	Flying at dusk.
„ inornata	Near Hastings	Rev. E. N. Bloomfield	Aug. 9	In litt.	
Cabera rotundaria	Worcester?	A. Edmunds		In litt.	Two specimens bred.
Aleucis pictaria	Loughton	E. G. Meek	April	In litt.	Sitting on sloe bushes.
Macaria alternata	Fairlight	Rev. E. N. Bloomfield	July 20	In litt.	One specimen.
Aventia flexula		P. C. Wormald			
„ „	Mickleham	J. P. Barrett		Entom. 331	
Fidonia conspicuata	Colchester	W. H. Harwood		In litt.	Common.
„ „	Ipswich	T. Last		Entom. 189	Common.
Sterrha sacraria	Ilfracombe	J. S. Masterman		E. M. M.	In a stubble field.
„ „	Isle of Wight	J. Pristo	May 15	Entom. 289	One at rest, three others.
„ „	Exmouth	G. B. Longstaff	Aug. (e.)	E. M. M. 132	Amongst grass.
„ „	Brighton	J. W. Russell	Aug. 27	E. M. M. 131	In a clover field.
„ „	Dorsetshire	E. Dale	Aug. 31	E. M. M. 114	A ♀ recorded J. C. D.
„ „	North Perthshire	J. B. Blackburn	Aug. 14	E. M. M. 114	Three specimens.
„ „	Highgate	H. J. S. Pryor	Aug. 20	E. M. M. 113	At light.
„ „	Lancashire	S. J. Capper	Aug. 6	Entom. 347	Flew to light.
„ „	Newark	G. Gascoyne	Aug. 19	E. M. M. 113	Recorded also in Entom.
„ „	Neath	J. T. D. Llewelyn	Aug. 9 & 15	E. M. M. 91	One at light, another at rest.
„ „	Isle of Wight	H. Rogers	Aug. 14 & 16	Entom. 347	Two ♀ s, one at sugar.
„ „	Babbicombe	T. Terry	Aug. 26	E. M. M. 131	A ♂.
„ „	Isle of Wight	J. Pristo	Sept. 3	Entom. 348	Two eggs obtained.
„ „	Bolton quarry	E. L. Ragonot	Aug. 21	E. M. M. 131	At ragwort flowers.
„ „	Southsea	H. Moncreaff	Aug. 22	Entom. 347	Also on Sept. 2.
„ „	Plumstead	C. Boden	Sept. 7	E. M. M. 131	Also recorded in Entom.
„ „	Lancashire			Entom. 347	Four recorded by C. S. G.
„ „	Wallasey	E. L. Ragonot	Aug. 16	E. M. M. 131	One, another missed.
„ „	South Wales	J. T. D. Llewelyn		E. M. M. 154	Four more examples.
Aspilates citraria	Herne Bay	H. Vaughan	August	In litt.	Larva on wild carrot
„ „	Ventnor	E. G. Meek	Augnst	In litt.	Common

Local and Scarce British Lepidoptera for 1867—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Emmelesia decolorata	Hampstead	H. Vaughan	June	In litt.	Flying in meadows.
,, unifasciata	Herne Bay	C. J. Buckmaster	Sept.	E. M. M. 183	At flowers of ragwort.
,, ,,	Witherslack	J. B. Hodgkinson	...	E. M. M. 154	40 specimens.
,, ericetaria	Rannoch	T. & J. B. Blackburn	Aug.	E. M. M. 188	Flying over heath.
Eupithecia campanulata	Isle of Man	E. Birchall	June	Entom. 312	At flowers.
,, pulchellata	Edinburgh	A. Wilson	August	Entom. 344	In larval state.
,, ,,	York	T. J. Carrington	August 24	In litt.	New locality.
,, subfulvata	Croydon	H. Vaughan	October	In litt.	In larval state.
,, albipunctata	York	T. J. Carrington	March 19	In litt.	Bred a fine series.
,, lariciata	Cotswolds	Rev. H. Roberts	June	E. M. M. 187	Eggs obtained.
,, ,,	Haslemere	C. G. Barrett	May	In litt.	Beaten.
,, ,,	York	T. J. Carrington	May 18	...	Sitting on larch trees.
,, irriguata	Guestling	Rev. E. N. Bloomfield	May 7	E. M. M. 206	On trunk of a tree.
,, indigata	York	T. J. Carrington	May 18	In litt.	Sitting on fir trees.
,, distinctata	Isle of Man	C. Campbell	June	E. M. M. 132	New locality.
,, subciliata	Box Hill	P. C. Wormald	July 31	In litt.	Beaten from maple.
Lobophora viretata	South of Wales	J. T. D. Llewelyn	May	E. M. M. 263	
,, ,,	Colchester	W. H. Harwood	...	In litt.	One specimen.
,, hexapterata	Worcester	A. Edmunds	...	In litt.	Eleven specimens.
Ypsipetes ruberata	Wallasey	E. L. Ragonot	...	In litt.	Bred from pupæ under bark.
Melanippe hastata	Ipswich	T. Last	...	Entom. 189	Fourteen specimens.
Coremia munitata	Perth	J. Stewart	August	Dr. B. W. in litt.	
,, quadrifasciaria	Colchester	W. H. Harwood	...	In litt.	
Camptogramma fluviata	Guestling	Rev. E. N. Bloomfield	June (b.)	E. M. M. 207	One specimen.
,, ,,	Dorking	Hon. S. Canning	...	E. M. M. 208	At ivy.
,, ,,	Neath	J. T. D. Llewelyn	May 6 & 7	E. M. M. 16	At light, three specimens.
,, ,,	Exeter	G. B. Longstaff	August	E. M. M. 181	A male.
,, ,,	Peckham	J. P. Barrett	July & Aug.	Entom. 331	At light.
,, ,,	Colchester	W. H. Harwood	...	In litt.	One specimen.
,, ,,	Derbyshire	...	...	Entom. 316	Recorded by Rev. Sir C. R. Leighton, Bart.
,, ,,	Hampstead	P. C. Wormald	Aug. 31	In litt.	

Camptogramma fluviata	Hampstead	L. Lorinier	Sept.	H. V. in litt.	At light.
„ „	Vale of Neath	J. T. D. Llewelyn	Aug. 15	E. M. M. 92	Fifteen specimens.
Phibalapteryx lignata	Ipswich	T. Last	...	Entom. 189	At light.
Scotosia vetulata	Croydon	H. Vaughan	July	In litt.	Amongst buckthorn.
„ „	Witherslack	J. B. Hodgkinson	July 14	E. M. M. 138	
Eucosmia undulata	Guestling	Rev. E. N. Bloomfield	June 20	E. M. M. 207	
„ „	Colchester	W. H. Harwood	...	In litt.	Larvæ also taken.
„ „	Near York	T. J. Carrington	July 10	In litt.	Very fine condition.
Cidaria psitticata	Perth	J. Stewart	October	Dr. B. W. in litt.	At light.
„ silaceata	Perth	J. Stewart	June	Dr. B. W. in litt.	
Lithostege griseata	Near Brandon	T. Brown	June 18	Entom. 348	Seventeen bred. Larvæ found
Madopa salicalis	Kent?	T. Eedle	June	Entom. 313	No locality given.
„ „	Haslemere	C. G. Barrett	May	In litt.	Very scarce this year.
Nascia cilialis	"The Fens"	T. Eedle	August	In litt.	
Hypœna crassalis	Sevenoaks	E. G. Meek	July	In litt.	Amongst bilberry.
Hypœnodes costæstrigalis	Near York	T. J. Carrington	July 6	In litt.	A series taken.
„ „	Bidston	E. L. Ragonot	...	In litt.	Ditto.
Herminea derivalis	Guestling	Rev. E. N. Bloomfield	June & July	E. M. M. 207	One of them at light.
Pyralis glaucinalis	Colchester	W. H. Harwood	...	In litt.	
„ „	Guestling	Rev. E. N. Bloomfield	...	In litt.	Several specimens.
Rhodaria sanguinalis	Birkenhead	E. L. Ragonot	...	In litt.	Common on sand hills.
Acentropus niveus	Haslemere	C. G. Barrett	June	In litt.	New locality.
Botys hyalinalis	Surrey	T. Eedle	June	In litt.	
„ „	Box Hill	P. C. Wormald	July & Aug.	In litt.	By beating oaks.
„ lancealis	Guestling	Rev. E. N. Bloomfield	...	In litt.	Two specimens.
„ terrealis	Ulverstone	J. B. Hodgkinson	June 14	E. M. M. 138	
„ asinalis	...				
Spilodes sticticalis	Bury	Rev. A. H. Wratislau	...	Entom. 189	Very local.
Scopula decrepitalis	Rannoch	T. & J. B. Blackburn	August	E. M. M. 139	Near foot of Craig Cross.
Simiæthis pariana	Wandsworth	G. B. Longstaff	Sept.	E. M. M. 132	Among apple, nettle, yew.
Scoparia murana	Birkenhead	E. L. Ragonot	August	In litt.	Common.
„ cratægalis	Epping	P. C. Wormald	July 6	In litt.	Also at Box Hill.

Local and Scarce British Lepidoptera for 1867—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Limacodes asellus	Loughton?	T. Eedle	June	E. M. M. 69	
,, testudo	Guestling	Rev. E. N. Bloomfield	June (b.)	E. M. M. 207	One specimen.
,, ,,	Woolmer F.	C. G. Barrett	July	In litt.	Flying by day among oak.
Cymatophora fluctuosa	Guestling	Rev. E. N. Bloomfield	June (b.)	E. M. M. 207	One specimen.
,, ,,	Kent	T. Eedle	July	In litt.	
,, or	Near Hastings	Rev. E. N. Bloomfield	June 12	In litt.	One at sugar.
,, ocularis	Worcester	A. Edmunds	May, 1866	E. M. M. 185	Bred.
,, ridens	Guestling	Rev. E. N. Bloomfield	April 23	E. M. M. 206	One at rest, another at sugar.
Diphthera orion	Ipswich	T. Last	...	Entom. 189	Nine taken.
,, ,,	Colchester	W. H. Harwood	...	In litt.	About a dozen larvæ
Acronycta tridens	Haslemere	C. G. Barrett	...	In litt.	Bred.
,, leporina	Tilgate	E. G. Meek	Sept.	In litt.	Larvæ on birch.
,, ,,	Near Hastings	Rev. E. N. Bloomfield	June 1	In litt.	
,, ,,	Worcester	A. Edmunds	...	In litt.	
Leucania straminea	Herne Bay	C. J. Buckmaster	Aug. (e.)	E. M. M. 133	Pretty common.
,, ,,	Ipswich	T. Last	...	Entom. 189	
Tapinostola Bondii	Folkestone	H. Vaughan	July	In litt.	Towards Sandgate
Nonagria elymi	...	J. Chappell	Last season	E. M. M. 206	No locality given.
Senta ulvæ	Ipswich	T. Last	...	Entom. 189	
Xylophasia scolopacina	Colchester	W. H. Harwood	...	In litt.	
Xylomyges conspicillaris	Worcester	Rev. E. H. Todd	March (e.)	E. M. M. 184	Bred from a pupa dug.
,, ,,	Worcester	Rev. E. Horton	April 26	E. M. M. 16	Bred.
Aporophila australis	Deal	H. J. Harding	...	Entom. 354	Freely at sugar.
Luperina cæspitis	Cotswolds	Rev. E. H. Todd	...	,,	At light.
,, ,,	Colchester	W. H. Harwood	...	In litt.	
Mamestra albicolon	Wallasey	E. L. Ragonot	...	In litt.	Several at sugar.
...	South Wales	J. T. D. Llewelyn	June	E. M. M. 263	

Apamea ophiogramma	Near London	T. Eedle	June	In litt.	
Agrotis saucia	Perth	J. Stewart	October	Dr. B. W. in litt.	At sugar.
„ „	Worcester	A. Edmunds		In litt.	
„ „	Exeter	H. D'Orville	Aug. & Sept.	Rev. J. H. in litt.	At sugar.
„ „	Bidston	E. L. Ragonot		In litt.	A fine series at reed flowers.
„ „	Haslemere	C. G. Barrett	Sept.	In litt.	Beaten from thatch.
„ „	Colchester	W. H. Harwood	Sept. ?	In litt.	
„ cinerea	Cotswolds	Rev. E. H. Todd		E. M. M. 210	Two at light.
„ ripæ	South Wales	J. T. D. Llewelyn	July	E. M. M. 263	New locality.
„ cursoria	Birkenhead	F. L. Ragonot		In litt.	Common.
„ obelisca	Cotswolds	Rev. E. H. Todd		E. M. M. 210	
„ præcox	South Wales	J. T. D. Llewelyn	July	E. M. M. 263	
„ „	Crosby	E. L. Ragonot		In litt.	Good series ; large specimens.
„ agathina	Near York	T. J. Carrington	Aug. 24	In litt.	
„ ravida	Cotswolds	Rev. E. H. Todd		E. M. M. 210	
„ pyrophila	Northleach	Rev. E. H. Todd		Entom. 203	At sugar: also recorded in E. M. M.
Noctua dahlii	Hastings	Rev. E. N. Bloomfield	Aug. 9	In litt.	Also several 2 years ago.
„ „	Ipswich	T. Last		Entom. 189	One.
Tæniocampa leucographa	Croydon	C. J. Buckmaster	March	E. M. M. 68	At sallows.
„ opima	Birkenhead	E. L. Ragonot		In litt.	Two at sallows.
„ „	South Wales	J. T. D. Llewelyn	April	E. M. M. 263	New locality.
„ „	Near York	T. J. Carrington	April 5	In litt.	Several at sallows.
„ populeti	Croydon	C. J. Buckmaster	April 4	E. M. M. 68	At sallows.
„ „	Worcester	A. Edmunds		In litt.	Three bred.
„ „	Near York	T. J. Carrington	April 18	In litt.	Several at sallows.
„ miniosa	Hastings	Rev. E. N. Bloomfield	April 8	In litt.	Three at sallows.
„ „	Darenth	E. G. Meek	April	In litt.	At sallows.
„ „	Haslemere	C. G. Barrett	April	In litt.	At sallows.
Glæa erythrocephala	Canterbury	—— Parry		Entom. 228	Five specimens.
Dasycampa rubiginea	Exeter	Rev. J. Hellins		In litt.	One at sallows.
„ „	Isle of Wight	J. Ingram	Spring	E. M. M. 213	Two at sallows.
„ „	Bristol	A. E. Hudd	Oct. 27 & 30	E. M. M. 186	At ivy bloom.
„ „	Isle of Wight	J. Ingram	Autumn	E. M. M. 213	Six at ivy bloom.
Hoporina croceago	Clapham	W. Rogers	Oct. 18	In litt.	At ivy.
„ „	Croydon	J. B. Blackburn	March	E. M. M. 68	At sallows.

Local and Scarce British Lepidoptera for 1867—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Hoporina croceago	Guestling	Rev. E. N. Bloomfield	March 28	E. M. M. 206	A few at sallows.
" "	Darenth	E. G. Meek	April	In litt.	At sallows.
Xanthia aurago	Dorking	Hon. S. Canning	...	E. M. M. 208	At sugar.
" "	Bristol	A. E. Hudd	Oct. 27 & 30	E. M. M. 186	Two or three at ivy.
Cirrhædia xerampelina	Worcester	A. Edmunds	August	E. M. M. 185	Bred.
" "	Ipswich	T. Last	...	Entom. 189	
Tethea retusa	Exeter	Rev. J. Hellins	...	In litt.	Larvæ taken.
" "	South Wales	J. T. D. Llewelyn	...	E. M. M. 92	
" "	Worcester	A. Edmunds	...	In litt.	Bred one specimen.
" subtusa	Kew	P. C. Wormald	July	In litt.	Also by J.S.Pryer, at Highgate.
Cosmia pyralina	Saxmundham	Rev. E. N. Bloomfield	July 16	In litt.	Bred.
Eremobia ochroleuca	Herne Bay	H. Vaughan	August	In litt.	At teasel and other flowers.
Dianthæcia capsophila	Howth	W. F. Kirby	June 27	E. M. M. 90	One specimen.
" "	Howth	E. Birchall	June	In litt.	Also at Douglas.
" "	Isle of Man	H. Vaughan	June 27	E. M. M. 68	Larva again in 1867.
" "	Conway	J. Chappell	June	E. M. M. 206	Bred.
" Barrettii	Howth	W. F. Kirby	June 27	E. M. M. 90	Six specimens.
" "	Howth	E. Birchall	June	Entom. 301	
" cæsia	South of Ireland	W. Wright	July	E. M. M. 91	New locality.
" "	Douglas	E. Birchall	June	In litt.	
Epunda lutulenta	Surrey	T. Eedle	August	In litt.	
" viminalis	Battersea	W. Rogers	June	In litt.	Larvæ taken.
Phlogophora empyrea	Near Lewes	G. H. Verrall	...	Verb. com.	Scarce.
Aplecta occulta	Rannoch	T. & J. B. Blackburn	August	E. M. M. 139	By searching stumps.
" "	South Wales	J. T. D. Llewelyn	July	E. M. M. 263	New locality.
" tincta	Addington	W. Rogers	July 12	In litt.	Off the Bishop's fence.
" "	Hastings	Rev. E. N. Bloomfield	June 13	In litt.	One at sugar.
Hadena genistæ	Addington	W. Rogers	June 28	In litt.	Off the Bishop's fence.
" suasa	Worcester	A. Edmunds	...	In litt.	
Xylina Zinckenii	Near Dorking	Hon. S. Canning	October, 1866	E. M. M. 285	At sugar.

Xylina semibrunnea	Worcester	A. Edmunds	October, 1866	E. M. M. 185	At sugar.
„ „	Bristol	A. E. Hudd	October, 1866	E. M. M. 186	A few at ivy.
Cucullia scrophulariæ	Ponder's End	H. Vaughan	July	In litt.	Larvæ on scrophularia.
„ asteris	Tilgate	E. G. Meek	Sept.	In litt.	Bred.
„ gnaphalii	Tilgate	E. G. Meek	June 2	E. M. M. 114	Larva taken last autumn.
„ chamomillæ	Worcester	A. Edmunds	July, 1866	E. M. M. 185	New locality.
„ „	Bidston	F. Archer		E. L. R. in litt.	At light.
Heliothis armigera	Babbicombe	T. Terry	Oct. 16	E. M. M. 140	Two at ivy.
„ peltigera	Haslemere	C. G. Barrett	Aug. 22	E. M. M. 160	In a clover field.
„ „	South Wales	J. T. D. Llewelyn	July 22	E. M. M. 91	On the sand hills.
„ dipsacea	Cotswolds	Rev. E. H. Todd	June 22	E. M. M. 184	Flying in sun over flowers.
Agrophila sulphuralis	Bury	J. W. Whelan	June	E. M. M. 186	Three specimens.
Acontia luctuosa	Cotswolds	Rev. E. H. Todd	June, 1866	E. M. M. 184	Over thyme.
„ „	Bury	Rev. A. H. Wratislau		Entom. 199	One.
„ „	Near Gravesend	H. Vaughan	June	E. M. M.	One, a fine variety.
„ „	Surrey	T. Eedle	June	In litt.	
Erastria venustula	Loughton ?	T. Eedle	June	E. M. M. 69	
Hydrelia unca	South Wales	J. T. D. Llewelyn	May	E. M. M. 263	
„ „	Near York	T. J. Carrington	July 4	In litt.	
Brephos notha	Ipswich	T. Last		Entom. 189	Thirteen specimens.
Plusia bractea	Perth	J. Stewart	July	Dr. B. W. in litt.	Also by W. Herd.
„ interrogationis	Rannoch	T. & J. B. Blackburn	August	E. M. M. 139	Flying at flowers.
„ „	Perth	J. Stewart		Dr. B. W. in litt.	Also by G. J. Bruce.
Stilbia anomala	Ilfracombe	J. S. Masterman		G. B. L. in litt.	
„ „	Rannoch	T. & J. B. Blackburn	August	E. M. M. 139	New locality.
Catocala promissa ?	Chelsea	C. B. Walland	Aug. 21	Entom. 350	? C. nupta.
Eurymene dolabraria	Hampstead	H. Vaughan	June	In litt.	Flying at dusk.
„ „	Ipswich	T. Last		Entom. 189	One.
„ „	Croydon	J. P. Barrett		Entom. 330	Also at Epping.
Pericallia syringaria	Dorking	Hon. S. Canning		E. M. M. 208	In lanes.
„ „		P. C. Wormald			
„ „	Colchester	W. H. Harwood		In litt.	One specimen.
„ „	Haslemere	C. G. Barrett	May	E. M. M. 160	Larvæ and pupæ.
Selenia lunaria	South Wales	J. T. D. Llewelyn	May	E. M. M. 263	
„ „	Worcester	A. Edmunds		In litt.	Bred.
„ „	Guestling	Rev. E. N. Bloomfield	June (b.)	E. M. M. 207	One specimen.

Local and Scarce British Lepidoptera for 1867—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Selenia lunaria	Essex	T. Eedle	June	In litt.	
„ illustraria	Edmonton	J. W. Downing	May	E. M. M. 15	New locality.
„ „	Malvern	Rev. E. H. Todd	Aug. 15	E. M. M. 210	One.
„ „	South Wales	J. T. D. Llewelyn	May	E. M. M. 268	
„ „	Wimbledon	J. B. Blackburn	May	E. M. M. 68	
Ennomos alniaria	Deal	H. J. Harding		Entom. 354	Another ♂ at light.
„ tiliaria	Kildare County	Hon. E. Lawless	August	E. M. M. 187	New to Ireland.
„ fuscantaria	Dorking	Hon. S. Canning		E. M. M. 208	
„ „	Peckham	J. P. Barrett		Entom. 189	At light.
„ „	Colchester	W. H. Harwood		In litt.	Several specimens.
„ „	Surrey	T. Eedle	Sept.	In litt.	
„ erosaria	Colchester	W. H. Harwood		In litt.	Five or six.
Nyssia hispidaria	Richmond	S. A. Davis	Feb. 9	E. M. M. 263	Rather early.
Boarmia abietaria	Surrey	T. Eedle	June	In litt.	
„ consortaria	Kent	T. Eedle	July	In litt.	
Tephrosia extersaria	Guestling	Rev. E. N. Bloomfield	June 15	E. M. M. 207	One specimen.
„ „	Worcester	A. Edmunds	June?	In litt.	Five specimens.
Dasydia obfuscata	Rannoch	T. & J. B. Blackburn	August	E. M. M. 139	Rather plentifully at flowers.
Psodos trepidaria	Rannoch	T. & J. B. Blackburn	August	E. M. M. 139	On mountain tops.
Geometra papilionaria	Perth	W. Herd	August	Dr. B. W. in litt.	
„ „	Worcester	A. Edmunds		In litt.	Bred.
„ „	Croydon	W. H. Morris	July	H. V. in litt.	Flying at dusk.
„ „	Colchester	W. H. Harwood		In litt.	
Iodis vernaria	Croydon	H. Vaughan	July	In litt.	Amongst clematis.
„ „	Malvern	Rev. E. H. Todd	July 11	E. M. M. 210	Larvæ found also.
Phorodesma bajularia	Dorking	Hon. S. Canning		E. M. M. 208	In lanes.
„ „	Colchester	W. H. Harwood		In litt.	
„ „	Guestling	Rev. E. N. Bloomfield	June 29	E. M. M. 307	One.
Ephyra orbicularia	Haslemere	C. G. Barrett	May	In litt.	Flying at dusk.
„ „	Worcester?	A. Edmunds		In litt.	Bred.
Asthena blomeraria	Cotswolds	Rev. H. Roberts	June (e)	E. M. M. 187	At rest on a lamp.

Acidalia rubricata	Bury	Rev. A. H. Wratislau	...	Entom. 189	Rare.
„ trigeminata	Loughton	H. Vaughan	June	In litt.	Flying at dusk.
„ circellata	Manchester	C. Campbell	Aug. 15	E. M. M. 132	Bred from the eggs.
„ subsericeata	Guestling	Rev. E. N. Bloomfield	June	In litt.	Not uncommon.
„ „	Loughton	H. Vaughan	June	In litt.	Flying at dusk.
„ inornata	Near Hastings	Rev. E. N. Bloomfield	Aug. 9	In litt.	
Cabera rotundaria	Worcester?	A. Edmunds	...	In litt.	Two specimens bred.
Aleucis pictaria	Loughton	E. G. Meek	April	In litt.	Sitting on sloe bushes.
Macaria alternata	Fairlight	Rev. E. N. Bloomfield	July 20	In litt.	One specimen.
Aventia flexula	...	P. C. Wormald			
„ „	Mickleham	J. P. Barrett	...	Entom. 331	
Fidonia conspicuata	Colchester	W. H. Harwood	...	In litt.	Common.
„ „	Ipswich	T. Last	...	Entom. 189	Common.
Sterrha sacraria	Ilfracombe	J. S. Masterman	...	E. M. M.	In a stubble field.
„ „	Isle of Wight	J. Pristo	May 15	Entom. 289	One at rest, three others.
„ „	Exmouth	G. B. Longstaff	Aug. (e.)	E. M. M. 132	Amongst grass.
„ „	Brighton	J. W. Russell	Aug. 27	E. M. M. 131	In a clover field.
„ „	Dorsetshire	E. Dale	Aug. 31	E. M. M. 114	A ♀ recorded J. C. D.
„ „	North Perthshire	J. B. Blackburn	Aug. 14	E. M. M. 114	Three specimens.
„ „	Highgate	H. J. S. Pryor	Aug. 20	E. M. M. 113	At light.
„ „	Lancashire	S. J. Capper	Aug. 6	Entom. 347	Flew to light.
„ „	Newark	G. Gascoyne	Aug. 19	E. M. M. 113	Recorded also in Entom.
„ „	Neath	J. T. D. Llewelyn	Aug. 9 & 15	E. M. M. 91	One at light, another at rest.
„ „	Isle of Wight	H. Rogers	Aug. 14 & 16	Entom. 347	Two ♀ s, one at sugar.
„ „	Babbicombe	T. Terry	Aug. 26	E. M. M. 131	A ♂.
„ „	Isle of Wight	J. Pristo	Sept. 3	Entom. 348	Two eggs obtained.
„ „	Bolton quarry	E. L. Ragonot	Aug. 21	E. M. M. 131	At ragwort flowers.
„ „	Southsea	H. Moncreaff	Aug. 22	Entom. 347	Also on Sept. 2.
„ „	Plumstead	C. Boden	Sept. 7	E. M. M. 131	Also recorded in Entom.
„ „	Lancashire	...	...	Entom. 347	Four recorded by C. S. G.
„ „	Wallasey	E. L. Ragonot	Aug. 16	E. M. M. 131	One, another missed.
„ „	South Wales	J. T. D. Llewelyn		E. M. M. 154	Four more examples.
Aspilates citraria	Herne Bay	H. Vaughan	August	In litt.	Larva on wild carrot
„ „	Ventnor	E. G. Meek	August	In litt.	Common

Local and Scarce British Lepidoptera for 1867—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Emmelesia decolorata	Hampstead	H. Vaughan	June	In litt.	Flying in meadows.
„ unifasciata	Herne Bay	C. J. Buckmaster	Sept.	E. M. M. 133	At flowers of ragwort.
„ „	Witherslack	J. B. Hodgkinson	...	E. M. M. 154	40 specimens.
„ ericetaria	Rannoch	T. & J. B. Blackburn	Aug.	E. M. M. 138	Flying over heath.
Eupithecia campanulata	Isle of Man	E. Birchall	June	Entom. 312	At flowers.
„ pulchellata	Edinburgh	A. Wilson	August	Entom. 344	In larval state.
„ „	York	T. J. Carrington	August 24	In litt.	New locality.
„ subfulvata	Croydon	H. Vaughan	October	In litt.	In larval state.
„ albipunctata	York	T. J. Carrington	March 19	In litt.	Bred a fine series.
„ lariciata	Cotswolds	Rev. H. Roberts	June	E. M. M. 187	Eggs obtained.
„ „	Haslemere	C. G. Barrett	May	In litt.	Beaten.
„ „	York	T. J. Carrington	May 18	...	Sitting on larch trees.
„ irriguata	Guestling	Rev. E. N. Bloomfield	May 7	E. M. M. 206	On trunk of a tree.
„ indigata	York	T. J. Carrington	May 18	In litt.	Sitting on fir trees.
„ distinctata	Isle of Man	C. Campbell	June	E. M. M. 132	New locality.
„ subciliata	Box Hill	P. C. Wormald	July 31	In litt.	Beaten from maple.
Lobophora viretata	South of Wales	J. T. D. Llewelyn	May	E. M. M. 263	
„ „	Colchester	W. H. Harwood	...	In litt.	One specimen.
„ hexapterata	Worcester	A. Edmunds	...	In litt.	Eleven specimens.
Ypsipetes ruberata	Wallasey	E. L. Ragonot	...	In litt.	Bred from pupæ under bark.
Melanippe hastata	Ipswich	T. Last	...	Entom. 189	Fourteen specimens.
Coremia munitata	Perth	J. Stewart	August	Dr. B. W. in litt.	
„ quadrifasciaria	Colchester	W. H. Harwood	...	In litt.	
Camptogramma fluviata	Guestling	Rev. E. N. Bloomfield	Jane (b.)	E. M. M. 207	One specimen.
„ „	Dorking	Hon. S. Canning	...	E. M. M. 208	At ivy.
„ „	Neath	J. T. D. Llewelyn	May 6 & 7	E. M. M. 16	At light, three specimens.
„ „	Exeter	G. B. Longstaff	August	E. M. M. 131	A male.
„ „	Peckham	J. P. Barrett	July & Aug.	Entom. 331	At light.
„ „	Colchester	W. H. Harwood	...	In litt.	One specimen.
„ „	Derbyshire	...	...	Entom. 316	Recorded by Rev. Sir C. R. Leighton, Bart.
„ „	Hampstead	P. C. Wormald	Aug. 31	In litt.	

Camptogramma fluviata	Hampstead	L. Lorinier	Sept.	H. V. in litt.	At light.
„ „	Vale of Neath	J. T. D. Llewelyn	Aug. 15	E. M. M. 92	Fifteen specimens.
Phibalapteryx lignata	Ipswich	T. Last	...	Entom. 189	At light.
Scotosia vetulata	Croydon	H. Vaughan	July	In litt.	Amongst buckthorn.
„ „	Witherslack	J. B. Hodgkinson	July 14	E. M. M. 138	
Eucosmia undulata	Guestling	Rev. E. N. Bloomfield	June 20	E. M. M. 207	
„ „	Colchester	W. H. Harwood	...	In litt.	Larvæ also taken.
„ „	Near York	T. J. Carrington	July 10	In litt.	Very fine condition.
Cidaria psitticata	Perth ...	J. Stewart	October	Dr. B. W. in litt.	At light.
„ silaceata	Perth ...	J. Stewart	June	Dr. B. W. in litt.	
Lithostege griseata	Near Brandon	T. Brown	June 18	Entom. 348	Seventeen bred. Larvæ found
Madopa salicalis	Kent ?	T. Eedle	June	Entom. 313	No locality given.
„ „	Haslemere	C. G. Barrett	May	In litt.	Very scarce this year.
Nascia cilialis...	"The Fens"	T. Eedle	August	In litt.	
Hypœna crassalis	Sevenoaks	E. G. Meek	July	In litt.	Amongst bilberry.
Hypœnodes costæstrigalis	Near York	T. J. Carrington	July 6	In litt.	A series taken.
„ „	Bidston	E. L. Ragonot	...	In litt.	Ditto.
Herminea derivalis	Guestling	Rev. E. N. Bloomfield	June & July	E. M. M. 207	One of them at light.
Pyralis glaucinalis	Colchester	W. H. Harwood	...	In litt.	
„ „	Guestling	Rev. E. N. Bloomfield	...	In litt.	Several specimens.
Rhodaria sanguinalis	Birkenhead	E. L. Ragonot	...	In litt.	Common on sand hills.
Acentropus niveus	Haslemere	C. G. Barrett	June	In litt.	New locality.
Botys hyalinalis	Surrey	T. Eedle	June	In litt.	
„ „	Box Hill	P. C. Wormald	July & Aug.	In litt.	By beating oaks.
„ lancealis	Guestling	Rev. E. N. Bloomfield	...	In litt.	Two specimens.
„ terrealis	Ulverstone	J. B. Hodgkinson	June 14	E. M. M. 138	
„ asinalis	...				
Spilodes sticticalis	Bury ...	Rev. A. H. Wratislau	...	Entom. 189	Very local.
Scopula decrepitalis	Rannoch	T. & J. B. Blackburn	August	E. M. M. 139	Near foot of Craig Cross.
Simäethis pariana	Wandsworth	G. B. Longstaff	Sept.	E. M. M. 132	Among apple, nettle, yew.
Scoparia murana	Birkenhead	E. L. Ragonot	August	In litt.	Common.
„ cratægalis	Epping	P. C. Wormald	July 6	In litt.	Also at Box Hill.

Local and Scarce British Lepidoptera for 1867—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Scoparia truncicolalis	Dartford	P. C. Wormald	July 25	In litt.	On Baldwyn's fence.
„ atomalis	Black Forest	T. & J. B. Blackburn	August	E. M. M. 139	
„ alpina	Black Forest	T. & J. B. Blackburn	August	E. M. M. 140	Two specimens.
„ pallida	Near Haslemere	C. G. Barrett	...	E. M. M.	Several taken.
Homœosoma nimbella	Isle of Man	H. Vaughan	June	E. M. M. 68	Larvæ in chamomile, 1866.
Acrobasis consociella	Hastings	Rev. E. N. Bloomfield	July 2	In litt.	Several specimens.
Cryptoblabes bistriga	Worcester	A. Edmunds	...	In litt.	One specimen.
Myelois cribrum	Essex coast	H. Vaughan	April	In litt.	Larvæ in thistle stems.
„ pinguis	Near York	T. J. Carrington	July 25	In litt.	Off ash trees.
Hypochalcia ahenella	Forfarshire	J. Stewart	July	Dr. B. W. in litt.	Bred!
Nephopteryx abietella	Surrey	T. Eedle	June	In litt.	
Pempelia subornatella	Howth	C. S. Gregson	June & July	E. M. M. 70	New locality.
„ „	Isle of Man	E. Birchall	June (e.)	Entom. 312	Among wild thyme
„ formosa	Essex	T. Eedle	June	In litt.	
Crambus dumetellus	Haslemere	C. G. Barrett	June	In litt.	In rough fields.
„ ericellus	Rannoch	T. & J. B. Blackburn	August	E. M. M. 139	Not uncommon.
„ hamellus	Haslemere	C. G. Barrett	August	In litt.	On heaths.
„ sclasellus	"The Fens"	T. Eedle	August	In litt.	
„ latistrius	Birkenhead	E. L. Ragonot	Aug. 11	In litt.	Common, but not fine.
„ „	Haslemere	C. G. Barrett	August	In litt.	On heaths.
Chilo gigantellus	"The Fens"	T. Eedle	August	In litt.	
Antithesia capræana	Woolmer F.	C. G. Barrett	July	In litt.	
„ carbonana	Tilgate	E. G. Meek	June	In litt.	A single specimen.
„ „	Witherslack	J. B. Hodgkinson	May 19	E. M. M. 38	Rare in woods and rough fields.
„ „	Haslemere	C. G. Barrett	June to Aug.	In litt.	
„ sauciana	Surrey	T. Eedle	June	In litt.	
Dichelia grotiana	Hampstead	P. C. Wormald	July 14	In litt.	
Tortrix cinnamomeana	Woolmer F.	C. G. Barrett	July	In litt.	Amongst oak.
Lozotænia cratægana	Woolmer F.	C. G. Barrett	July	In litt.	Common among oak.
Phlæodes crenana	Witherslack	J. B. Hodgkinson	May 28	E. M. M. 138	
„ immundana	Tilgate	E. G. Meek	June	In litt.	Beaten out of birch.

Dicrorampha acuminatana	Isle of Wight	E. G. Meek	August	In litt.	A single example.
„ consortana	Witherslack	J. B. Hodgkinson	July 14	E. M. M. 138	New to the locality.
„ sequana	Haslemere	C. G. Barrett	June	In litt.	In rough fields.
Hedya servillana	Haslemere	C. G. Barrett	May & June	In litt.	Among sallows in woods.
„ lariciana	Witherslack	J. B. Hodgkinson	July 14	E. M. M. 138	
Steganoptycha geminana	Surrey	T. Eedle	July	In litt.	
„ „	Sevenoaks	E. G. Meek	July	In litt.	Amongst bilberry.
„ ustomaculana	Rannoch	J. B. Blackburn	August	E. M. M. 139	Freely at Black Forest.
Anchylopera ramella	Tilgate	E. G. Meek	June	In litt.	Amongst black poplar.
„ diminutana	Haslemere	C. G. Barrett	May	In litt.	Amongst sallow.
„ biarcuana	Tilgate	E. G. Meek	June	In litt.	Scarce.
Dictyopteryx Shepherdana	"The Fens"	T. Eedle	August	In litt.	
Oxygrapha scabrana	Exeter	H. D'Orville	Autumn	E. M. M. 187	In abundance.
„ boscana	Exeter	H. D'Orville	August	E. M. M. 187	Sparingly.
Pædisca oppressana	Edmonton	H. G. Knaggs	June 12	E. M. M. 87	About a dozen.
Roxana arcuella	Hampstead	H. Vaughan	June	In litt.	Flying in sunshine.
Semasia ephippana	Crosby	E. L. Ragonot	August	In litt.	Among willows.
Retinea pinicolana	Dartford	P. C. Wormald	July 25	In litt.	Baldwyn's fence.
„ turionella	Haslemere	C. G. Barrett	June	In litt.	Beaten from young fir.
Heusimene fimbriana	Darenth	E. G. Meek	April	In litt.	Scarce. Also by T. E.
Grapholitha microgrammana	Folkestone	J. L. Courtice	June (b.)	E. M. M. 86	Over ononis.
Endopisa puncticostana	W. Wickham	P. C. Wormald	June (b.)	In litt.	Amongst heath.
Cnephasia alternana	Rannoch	J. B. Blackburn	August	E. M. M. 140	
Euchromia rufana	Lancashire	J. B. Hodgkinson	...	E. M. M. 139	
„ purpurana	Haslemere	C. G. Barrett	June	In litt.	By a railway bank.
Sericoris abscissana	Isle of Wight	E. G. Meek	August	In litt.	A single specimen.
„ „	"The Fens"	T. Eedle	July	In litt.	
„ littorana	Isle of Man	E. Birchall	...	Entom. 312	
„ euphorbiana	Folkestone	J. L. Courtice	June (b.)	E. M. M. 86	Over spurge.
„ bifasciana	W. Wickham	P. C. Wormald	June 22	In litt.	One specimen.
Mixodia palustrana	Rannoch	J. B. Blackburn	August	E. M. M. 189	Plentifully.
Eriopsela quadrana	Isle of Man	E. Birchall		Entom. 312	Three specimens.
Chrosis Audouinana	Loughton?	T. Eedle	June	E. M. M. 69	
„ „	Haslemere	C. G. Barrett	June	In litt.	Flying in a wood path
Argyrolepia dubrisana	Tunbridge Wells	Hon. T. de Grey	May 25	E. M. M. 87	Rather early?
„ „	Folkestone	E. G. Meek	May	In litt.	Several specimens.
Eupœcilia atricapitana	Isle of Man	E. Birchall	...	Entom. 312	
„ albicapitana	Howth	W. F. Kirby	June 27	E. M. M. 90	

Local and Scarce British Lepidoptera for 1867—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Eupœcilia albicapitana	Howth	E. Birchall	...	In litt.	
„ nana	Tilgate	E. G. Meek	June	In litt.	Abundant.
„ ambiguana	Haslemere	C. G. Barrett	June	In litt.	Apparently getting scarce.
„ „	Tilgate	E. G. Meek	...	E. M. M. 37	Beaten from underground.
„ flaviciliana	Kent	T. Edle	August	In litt.	
Cochylis smeathmanniana	Wimbledon	J. B. Blackburn	May	E. M. M. 64	Over Anthemis cotula.
„ „	Hampstead	P. C. Wormald	Aug. 12	In litt.	At light.
Pterophorus acanthodactylus	Herne Bay	C. J. Buckmaster	August (e.)	E. M. M. 133	
„ „	Near Hastings	Rev. E. N. Bloomfield	June 9	In litt.	
„ punctidactylus	Haslemere	C. G. Barrett	Sept.	In litt.	Flying in a lane.
„ hieracii	Delamere F.	N. Greening	...	E. M. M.	Larva discovered on Teucrium.
„ pilosellæ	W. Wickham	P. C. Wormald	July 27	In litt.	In a swamp.
„ bipunctidactylus	Colchester	W. H. Harwood	...	In litt.	In the larval state.
„ Loewii	Haslemere	C. G. Barrett	July	In litt.	Not recognised before, but the food plant is common.

Table of Larvæ discovered and described in 1867.

* F.f. =*full fed.*

Species.	Date.	Food.	By whom and where described.	Remarks.
Trochilium chrysidiforme	F.f.* July (b.)	Roots of dock and sorrel	W. Buckler, E. M. M. iv. 14.	Discovered simultaneously by Mr. E. G. Meek, and in Corsica by M. P. Mabille.
Miana furuncula	F.f. June (b.)	Stems of Festuca arundinacea	W. Buckler, E. M. M. iv. 137.	Forwarded to Mr. Buckler by self.
Agrotis lunigera	F.f. Oct. (e)	Will eat Polygonum aviculare	W. Buckler, E. M. M. iii. 188.	Discovered by Mr. T. Terry.
Noctua conflua	May	Silene acutalis	E. Newman, Entom. iii. 182.	? Distinct from N. festiva.
Acidalia emutaria	F.f. June (m.)	Will eat Polygonum, Lotus, &c.	Rev. J. Hellins, E. M. M. iv. 89.	Discovered by Messrs. Fenn and Jones.
Pachycnemia hippocastanaria	F.f. Oct. (m.)	Calluna vulgaris	E. Newman, Entom. iii. 355.	Larvæ known previously, but undescribed.

Table of Larvæ—*continued.*

Species.	Date.	Food.	By whom and where described.	Remarks.
Lithostege griseata ..	August ..	Sisymbrium sophia ..	Rev. J. Hellins, E. M. M. iv. 115.	Discovered by Mr. Brown, of Cambridge.
Tanagra chærophyllata	F.f. June (b.)	Flowers of Bunium flexulosum	W. Buckler, E. M. M. iv. 85.	Incorrectly described before. Discovered by Mr. Howard Vaughan.
Phycis adelphella ..	July 18 ..	Aspen	Rev. E. Horton, E. M. M. iv. 152.	Feeds between the leaves.
Pterophorus isodactylus	.. ..	Stems of Senecio nemorensis	M. P. C. T. Snellen.	See note, E. M. M. iv. 39, by Mr. Stainton.
Pterophorus hieracii ..	May (m.) ..	Teucrium scorodonia ..	N. Greening, E. M. M. iv. 18.	Further interesting notes, E. M. M. p. 39.
Pterophorus plagiodactylus ..	April & May	Scabiosa columbaria ..	C. S. Gregson, Entom. iii. 186.	Feeds in the heart of its food-plant.
Pterophorus osteodactylus ..	F.f. Spring ..	Flowers and seeds of Solidago virgaurea	C. S. Gregson, Entom. iii. 201.	Hybernates in the larval state.

NEW BRITISH TINEINA.

By H. T. Stainton, F.R.S.

◆

In the past season three novelties have been detected in this country, and been added to our list of Tineina. These are *Solenobia conspurcatella*, Zeller (an Italian species, though also found latterly in Belgium), *Ypsolophus ustulellus*, Fabricius (a species by no means uncommon near Brussels, and now found in the cabinets of two zealous Entomologists of Worcester), and *Opostega reliquella*, Zeller, a small white species, with the dull inert flight of its congeners.

Solenobia conspurcatella, Zeller. (Fig. 3.)

This pretty species, first detected in Tuscany by Herr Joseph Mann in 1846 (see Stettin. Ent. Zeitung, 1850, p. 59), was met with near Brussels in 1861 by my friend M. Fologne, who thus wrote to me, March 15th, 1861: "I have bred a species of *Talæporia* distinct from *Inconspicuella*. I found the cases *containing pupæ* three weeks ago. (*Inconspicuella* is now *still* in the larva state.) They were under the bark of a dead tree."

On the 28th of the same month he wrote to me: "I now send you this *Talæporia*, which I take freely on the wing at the place where I had found the cases—the specimens are all very similar to that which I send and the species does not seem to vary much." Subsequently, on passing through

Brussels, M. Fologne liberally supplied me with a fine series of the males of this species, which at that time I thought undescribed.

On my return home from the South of France, at the beginning of April last, I found waiting for me a letter from a new correspondent, Mr. A. H. Swinton, with a sketch of a moth he had met with at the latter end of March, 1867, on the shore of Southampton Water, opposite Calshot Castle—the species was found flying, not uncommonly, in the neighbourhood of spruce firs. On asking for the sight of a specimen, Mr. Swinton most liberally sent me several, and I at once recognised the insect taken by M. Fologne, near Brussels in 1861.

I have been very near describing the species as new, never having thought of looking for it amongst the species described from *Tuscany;* but in working at my forthcoming volume on the Tineina of Southern Europe, when I came to the description of *Solenobia conspurcatella,* it at once occurred to me that this was my Southampton friend, and on comparing description and specimens together, their identity was at once apparent.

The following is the description which I had written out for my friend M. Fologne, whilst under the impression that the insect was new to science:—

> "Alis anticis angustulis, albido-stramineis, nitidis, concinne fusco-punctatis, maculis tribus majoribus fuscis, prima dorsi basim versus, secunda dorsi ante medium, tertia disci pone medium; antennis distinctissime ciliatis.
>
> "Exp. al. 5½—6½ lin.

"Head fuscous. Face fuscous, mixed with whitish straw-colour. Antennæ pale fuscous, very distinctly ciliated.

"Anterior wings shining, whitish straw-colour, delicately spotted with fuscous, and with three larger fuscous spots, the most distinct at the end of the discoidal cell; on the inner margin, a little before the middle, is another almost as distinct, and the third lies on the inner margin near the base of the wing; the small spots along the costa beyond the middle are particularly distinct; cilia fuscous at the base, then paler fuscous, intersected by several faint dashes of whitish straw-colour.

"Posterior wings pale grey, with a faint purplish gloss; the cilia silky pale grey.

"In markings this perhaps comes nearest to *S. inconspicuella*, but is distinguished at a glance by the very different ground colour, by the more opaque hind wings, and by the distinctly ciliated antennæ."

YPSOLOPHUS USTULELLUS, Fabricius.

Professor Frey makes the remark in his "Tineen und Pterophoren der Schweiz," that it is extraordinary the English Fauna should only possess two species of *Ypsolophus*, and at that time *Fasciellus*, which even yet is always a rarity with us, and the pretty, neat *Marginellus*, were the only two known British species. Since then *Juniperellus* has occurred in Perthshire, and no doubt we have it also in many parts of the South of England.

Of *Ustulellus* Frey remarks, "widely distributed but scarce; occurring in Livonia, Hungary, Naples, and the North of France; but in Germany more in the south, at Frankfort-on-the-Main, Carlsruhe and Constance; also in Austria.

"Scarce in Switzerland; observed at Bremgarten (Boll) and Lausanne (Laharpe)."

Here there is only one locality bordering upon England, but on turning to Duponchel we find "il n'est pas rare dans le département du Nord."

In May, 1857, passing through Brussels on my return from Zürich, M. Fologne gave me some specimens of *Ypsolophus ustulellus* captured near Brussels, and two years subsequently, when on my journey towards Ratisbon, he gave me some more specimens of the insect. Its occurrence as no rarity near Brussels led me to expect it would ere long make its appearance in the British List.

When at Brussels in September, 1862, Dr. Breyer gave me some larvæ of the insect, from which I made the following description on the 21st of that month:—

"Length 8 lines. Dull green, inclining to yellowish-green; dorsal vessel darker green; head large, dark brown; anterior half of the second segment brown, posterior half blackish; anterior halves of the 3rd and 4th segments greenish, posterior halves blackish; spots large and black; the penultimate segment with a dark green-grey ring anteriorly and another posteriorly.

"It feeds between united leaves of hazel and hornbeam, and passes the winter full-fed in the larva state."

In the latter part of October, 1867, two specimens of a new British insect were placed in my hands for determination, and they proved to be the well known Continental species, *Ypsolophus ustulellus.*

The captor, the Rev. E. Horton of Worcester, thus writes in the pages of the Entomologist's Monthly Magazine (vol. iv. p. 152), "The finest was taken, with another as fine, about eight miles from here, May 29th, 1864, sunning itself on lime leaves. I took *Roeslerstammia Erxlebella* at the same time. The worn specimen was taken close at home in 1865. I forget the time of year, but I know that I beat it out of hazel." Mr. A. Edmunds, of Worcester, has a specimen captured in 1861, of which he thus writes: "Six years ago I beat out of a birch tree into my net a fine and perfect example of this handsome insect. A season or two afterwards the Rev. E. Horton I believe captured three, but it was only very lately that he kindly gave me the welcome information that it was a species new to our lists. Neither of us knew at the time of capture that we had ferreted out anything new in Worcestershire. The fact is cheering, and I trust the next season will enable us to complete our series of this species, and likewise to assist our friends."

To convey to our readers an idea of the insect it may be mentioned that the expansion of the wings is from 9 to 10 lines, that the anterior wings are narrower than in *Y. fasciellus*, of a rusty brown, more or less sprinkled with greenish-yellow scales towards the base.

Fabricius says of the species "*alæ lineares*," an expression which is much too forcible, but the remainder of his description is very characteristic.

OPOSTEGA RELIQUELLA, Zeller.

Zeller, in the third volume of the Linnæa Entomologica (published in 1848), describes, under the name of *Reliquella*, a new species of the genus *Opostega*. He then possessed only two specimens.

Subsequently, he met with it in some plenty; and, in 1850, he sent me a fine series, which were taken on the banks of a flooded meadow, on the 29th and 30th of May.

The species closely resembles *Salaciella*, and is only distinguished from it by the presence of a (rather faint) yellowish fascia beyond the middle of the anterior wings. *Salaciella*, as far as I am aware, has never the slightest indication of a fascia. Unfortunately, the distinctness of the fascia varies much in different specimens of *Reliquella*, so that sometimes it is scarcely visible.

There seems, however, a difference of habit in the two species; *Salaciella*, as far as I know, always frequents dry localities, and generally is only met with singly; on the 17th June, 1858, I captured twelve specimens of *Salaciella*, near Guildford, amongst *Trifolium arvense* and *Rumex acetosella*; otherwise I have only met with it singly; and Zeller says of it, that near Glogau he has often found it in the driest fir and birch woods, but always singly.

In a box of insects sent me for determination by the Hon. T. de Grey, M.P., I found a specimen of *O. reliquella*, the first British specimen I had seen. An inquiry, as to the locality and date of its capture, produced the following reply:

"I have seen three specimens, and three only, of *Opostega reliquella* here [near Thetford]; I took one last year, in an open grass-plot on the outskirts of a wood. I caught a second, in exactly the same spot, about the middle of June (11th ?) this year, in my hat, but it escaped; and the third (which you saw), I beat from mixed growth in a grass-ride in the woods, about 150 yards from where I took the other two: this last specimen was taken early in August, as far as I can remember."

Shortly afterwards, I received from Mr. P. C. Wormald, notice of some captures of *Tineina* in 1867, and was much struck with the following entry:

"*Opostega salaciella*, near Hampstead, August 6th, swarming on a gas-lamp." The idea of *Salaciella* swarming seemed to me so novel, that I wrote for further information, and begged a sight of the specimens; one of them is an undoubted *Reliquella;* another, taken along with it, seems more doubtful. The singular circumstance is, that Mr. Wormald only found the *Opostega* on one particular evening, and only at one lamp; not one was to be seen on any of the neighbouring lamps which he examined.

Possibly, in some of our collections, *Reliquella* may be found mixed with *Salaciella.*

It would be very desirable to discover the larvæ of both species.

The only larva of this genus, of which any thing is known, is that of *Opostega auritella;* Dr. Schleich found it in 1863, near Stettin; it lives in May, in the flower-stalks of *Caltha palustris.* Unfortunately, only a single, crippled specimen was bred; and I am not aware that the larva has again been met with.

P.S.—Since writing the above, Baron von Nolcken (of Arensburg, in the Island of Oesel), who is now with me, and has lately been visiting Meseritz, informs me that Professor Zeller is now disposed to consider *Reliquella* and *Salaciella* only as extreme forms of the same species.

OBSERVATIONS ON TINEINA.

BY H. T. STAINTON, F.R.S.

A SECOND visit to the South of France—where I arrived at Cannes on the 27th of February, and left Mentone on the 27th of March—has added largely to my stores of observation, respecting the *Tineina* of that sunny country; but a few only of these observations are noticed here, as the whole will find a place in the forthcoming volume on "The Tineina of Southern Europe."

I must beg the true, exclusive, British collector not to suppose that he is in no way concerned with the South of Europe; insects from that part of the world are constantly turning up on our shores. The conspicuously beautiful, new *Solenobia*, already noticed in this volume, was first detected in Italy, and even the original specimen of *Ypsolophus ustulellus*, described by Fabricius, was an Italian one.

But, altogether independently of the occurrence amongst us of insects only previously known as occurring on the banks of the Mediterranean, it is no slight matter to have opportunities of studying the habits of species allied to, or congeneric with, those of this country, whose mode of life still remains a mystery to us. Of this we have a noteworthy instance in the genus *Zelleria;* this genus was created in England, and we have three distinct species; and though there is a tradition that I actually bred a specimen of *Z.*

hepariella fifteen years ago, to this day we are ignorant of the larvæ of all our British species. Now, near Cannes, M. Millière, whose praiseworthy researches into the habits of the *Lepidoptera* of Provence are conferring a great boon on the Entomologists all over Europe, has met with the larva of a *Zelleria*, closely allied to *Hepariella*, and I have handled these larvæ by the dozen, and have described them and had them figured. M. Millière, in the eighteenth number of his "Iconographie et Description de Chenilles et Lépidoptères inédits," figures the transformations of this new species, and describes it under the name of *Zelleria Phillyrella*; but to this subject I shall again recur in its proper place.

The species marked* are not yet known as British.

**Hyponomeuta egregiella*, Duponchel (see E. A. 1867, p. 17). I renewed my acquaintance with the larva of this species, in the first week in March, and found, in some localities about Cannes, the insect was particularly plentiful; individual bushes of *Erica scoparia* appearing quite full of their white webs. At Mentone I have not yet found this species; but as on the eve of my quitting that spot, I, in company with Mr. J. T. Moggridge, noticed a considerable quantity of the *Erica scoparia* on the ridge (where *Arbutus* grows so freely) between the Cabrolles valley and the Gorbio valley, I should not be surprised if hereafter the *Egregiella* should be found there.

When at Fontainebleau, on the 1st of April, M. Berce shewed me some specimens of *H. egregiella*, from the forest there, and his note respecting them was as follows;—"Chenille vivante en société sur les bruyères en Mai, éclos fin "de Mai, Fontainebleau, (1857)." That very afternoon, whilst making a ramble together through the forest, we fell in with the larvæ, in far greater profusion than I had ever met with them in the South, and feeding on our common English *Erica*, *E. cinerea*.

I should observe, that Fontainebleau, with its sandy soil and numerous rocks, is a particularly warm locality, though less than forty miles from Paris; and that some insects occur in the forest there, which are not again met with till the collector has proceeded 250 miles further towards the South.

Hence it does not necessarily follow, that because this species of *Hyponomeuta* occurs at Fontainebleau, it *must* occur with us, but its occurrence so much further North than Cannes, and its being perfectly at home on *Erica cinerea*, should be an additional reason for our looking for it.

M. Millière, who has published his observations on this species in the sixteenth number of his "Iconographie, etc.," calls attention to the fact, that the species occurs near Lyons in tolerable plenty; and that the specimen described by Duponchel came from "les environs d'Avesnes," which is in the Département du Nord.

The sandy heaths of Hampshire will probably, some day, supply our collections with this species.

**Prays oleellus*, Boyer de Fonscolombe (see E. A. 1867, p. 18). I was comparatively unfortunate with the larvæ of this species last spring: they were not quite so far advanced as the previous year when I left Mentone, and I returned home with very few pupæ, but, on the other hand, with several larvæ not yet fed up; the olive shoots which I had brought with me to supply them, decayed before the larvæ were full fed, and starvation stared my larvæ of *Oleellus* in the face. In this dilemma, I resolved to try them with some plant nearly allied to olive, and I gave them privet—selecting twigs on which the young shoots were just bursting. I was gratified by finding that the larvæ took kindly to the privet, and the amount of the excrement they deposited showed that they really partook of the strange food I had offered them; in due time, two specimens of the *imago* were reared (May 1st and 3rd), from these larvæ, which had fed-up on privet.

**Depressaria rutana*, Fabricius. Of this species, so long forgotten, I have now had the pleasure of making the personal acquaintance. Directly I arrived at Cannes, M. Millière proposed that we should make an excursion to the Isle St. Marguerite; so, as a natural result, we had a series of windy days, making the boat-trip thither unpleasant or impossible; I began at last to think the excursion never would be carried out: however the morning of Monday, March 11th, was propitious, the sea was beautifully calm; and I had the pleasure of visiting the island in company with M. and Madame Millière, Dr. and Madame Segnac.

Directly we landed, the large tufts of rue (*Ruta angustifolia*) attracted my attention, as here was the locality where M. Millière had promised I should find the larvæ of *D. rutana;* after much search on my part, and much beating into his umbrella, on the part of M. Millière, the result was one larva of *D. rutana.* M. Millière could only account for our bad success by suggesting that we were rather early for the species, the season being comparatively a backward one.

On the 14th March, the day after my arrival at Mentone, I visited the rocky slope above Pont St. Louis, in company with Mr. J. T. Moggridge, and there found one small larva of *D. rutana.* I searched again and again in that locality, and also in other localities wherever I met with *Ruta*, but to no purpose till, on the 21st of March, I visited the principality of Monaco. The sides of the promontory are laid out here and there in a series of terraced, zig-zag walks;

there is a certain amount of artificial gardening, but many of the natural productions of the soil grow unheeded, and perhaps a little more luxuriantly than if on the perfectly uncultivated ground; the plants of *Ruta* growing here had, certainly, a more sturdy aspect, than those I had previously met with; and here I found the larvæ of *D. rutana*.

They were very easy to find—drawing together a few leaves of the plant, with a slight amount of web, after the manner of the genus; I looked carefully over every plant of *Ruta* I could find in this sequestered nook, and collected about thirty larvæ; the perfect insects made their appearance from the 4th to the 16th of May.

The larva I have thus described:

Young larva. Length 1½‴; yellowish-green; head black; 2nd segment reddish-brown black; anterior legs black.

Larva, two-thirds grown. Length 6½‴; green; dorsal vessel slightly darker; spots small, black, placed in pale green rings; head black; anterior edge of the 2nd segment reddish-brown, posteriorly with two large black lunate plates, scarcely divided in the centre, anal segment pale green; anterior legs yellowish.

Adult larva. Length 9‴; this had faint indications of darker green subdorsal lines.

Gelechia pinguinella, Treitschke (see E. A. 1865, p. 129). On the 15th of June last I received some larvæ of this species from Mr. Bond, with the intimation that they were taken from the tree which furnished the perfect insects in 1865. The larvæ were just in the act of spinning when they reached me, but I made the following description:—Length 5½‴; pale green, with a faint rosy tinge on the back, leaving the dorsal and subdorsal lines paler; head black; 2nd segment with a black lunate mark on each side; spots small, blackish.

I believe it still a disputed point on what the larva *feeds*;

all accounts seem to agree that the full-fed larvæ are found *gregariously under the bark* of poplar trees. Frey states that according to Schmid the larva feeds on the *leaves* of the poplar trees; according to the observations of the late Herr Grabow the larva feeds on the *moss* growing on the trunks of poplar trees. Let us hope that Mr. Bond will next year ascertain where the larva is, and what it is doing, about the second week in May.

**Gelechia figulella*, Staudinger (Ent. Zeit. 1859, p. 242). As my friend Professor Zeller is still perplexed as to the specific distinctness of *G. terrella* and *G. desertella*, it must be a source of great satisfaction to him to learn that Staudinger's *figulella* comes between the two, but has a reddish tinge, which we do not perceive in either *G. terrella* or *G. desertella*. It will be remembered that I bred a specimen of *G. desertella* from a firm sand-cocoon accidentally picked amongst some moss on the sand-hills near Bideford in May, 1865 (see Ent. Mo. Mag. vol. iii. p. 57); but in reference to *G. figulella*, my information goes further, and I have actually described the larva.

On the afternoon of the 28th of February, M. Millière conducted me to a sandy wood near the sea, on the east side of Cannes; thence we emerged on to some sand-hills on which grew plants of *Silene Nicæensis*. These had been terribly eaten by some larvæ, the young shoots being often eaten quite level with the surface of the sand; we sat down beside them and began to poke away the sand from about the stems of these plants; in so doing we dislodged a number of larvæ, with similar habits to those of *G. marmorea*, and a number of firm sand-cocoons, quite similar to those of *G. marmorea*. Indeed I believe the bulk of the larvæ and pupæ we thus collected belong to a new species closely allied to *G. marmorea*.

The following morning I rose early to describe the larva of the suspected novelty, which I was anxious to have figured as soon as possible, lest indeed they should all be spun up before that could be effected. On turning out the sand-cocoons and larvæ on the table, great was my surprise to find one larva which differed from all the others; it was larger, nearly 6 lines long, the others averaging only 4½; it was whitish-ochreous instead of greenish, and instead of a shining black head, the head was pale brown, with the mouth darker. In short it was evident at a glance that this larva was totally distinct from the others.

I described it as follows:—Length nearly 6‴; whitish-ochreous; head pale brown, the mouth darker; second segment with a dark brown semi-crescent on each side; dorsal line slender, reddish-ochreous; subdorsal lines dark brown, paler in front; spots minute black; anal segment glassy.

I put this individual larva carefully in a box by itself, and it commenced spinning-up the same day; on the 27th of April it produced a specimen of *Gelechia figulella!*

I bred three other specimens from the sand-cocoons on the 6th, 8th and 10th of April—so that the specimen which appeared on the 27th of that month was exceptionally late, but for which circumstance I should not have had the pleasure of seeing the larva; the proper time for finding these larvæ should be the latter half of January up to the first week in February.

I am now actually acquainted with the larva of one of the *Terrella* group, but as yet I do not know it in a feeding state, but the probability seems to me very great, that it feeds on the *Silene Nicæensis.* I do not call to mind that there was any moss in the locality where we found these plants. The sand was perfectly loose and shifting. If *Gelechia desertella* be also attached to one of the *Caryophyllaceæ,* it will probably be found to feed on the same *Cerastium* as the larva of *G. marmorea.*

Gelechia terrella, W. V. The following notice of the larva of our very old friend has appeared in the 8th volume of the Tijdschrift von Entomologie, p. 131, from the pen of that excellent observer, P. C. T. Snellen:—"I found two specimens of this still undescribed larva at the end of March near Rotterdam; one was on turfy ground, the other on a sandy spot, where some grass came through. When I reached home I placed these larvæ in a confectioner's glass with some grass-plants, and found on examining them, that they had spun a sort of loose silken case on the ground between the grass; in this case they could move very quickly either backwards or forwards. They fed on the lowermost parts of the grass-stems, which they gnawed off, and after some time each formed a cocoon of silk mixed with earth, a few Dutch inches deep in the ground; in this they changed to the pupa state; the pupa is light brown. Two specimens of the imago appeared on the 1st and 18th of June.

"The larvæ, when I found them, were a Dutch inch in length; thin, cylindrical, like the larva of *Eurrhypara urticata,* Hb., and of many *Tortricina;* of a dark green-grey colour, rather shining, beneath somewhat paler, and clothed with short hairs on black warts. On the back one saw three indistinct darker lines, and on the first segments behind the head an indistinct whiteness. The head was black, small; the second segment broader than the head, yellow, with two black spots. When they were older the colour was paler, more greyish, and when they had attained their full size they were about a Dutch inch and a-half in length." [Judging from these dimensions a Dutch inch must be about the half of one of ours.]

Gelechia lucidella, Stephens. Mr. P. C. Wormald writes me that he met with this species at Ruislip Reservoir, Middlesex, on the 22nd of July, and that by sweeping the

Typha latifolia he found it rather commonly. I hope some day to have the pleasure of taking the insect myself.

Gelechia arundinetella, Zeller (see E. A. 1858, p. 91). The occurrence of this species in a swampy place at Lee (alias "*the* sallow pit") is already recorded by Mr. Douglas in the 3rd volume of the Ent. Mo. Magazine, p. 91. Previously I had been in the habit of making pilgrimages to Hackney, sometimes two or three times in a season, in search of this insect, which, though sometimes abundant in the larva state, is almost impossible to breed, and specimens captured on the wing remind one of many an Entomological description, because it is almost impossible from them to make out the species.

As the insect had been detected in a locality so near to myself I hoped to have succeeded in getting a fine series of larvæ, and possibly expected to have reared a few of the perfect insect. However, repeated visits to the spot only resulted in one probable larva which I did not rear. I then tried for the imago, and had the pleasure of capturing a very inferior specimen on the 22nd July, the very day that Mr. Wormald was better employed amongst *G. lucidella.*

On the 11th of November Mr. Sang sent me from Darlington a *Carex* leaf, which I believe was mined by several of the young larvæ of this species; it probably feeds gradually throughout the winter, only becoming torpid during the continuance of frost. I entertain very little doubt but that the insect may be found nearly throughout the country wherever there are the swampy places which produce the *Carex riparia* or *paludosa.*

**Ypsolophus trinotellus,* Herrich-Schäffer (Neue Schmetterlinge, p. 6, No. 35, description very good; the figure had better not be looked at, so I do not refer to it); *Gelechia torridella,* Zeller in lit. (not the *Parasia torridella* of Mann).

Of this well-marked species I have had the pleasure of breeding five specimens. Their history is as follows:—

On the 18th of March, 1867, I received in the evening a letter from Mr. J. T. Moggridge—"I enclose a few red larvæ, with black heads, which have robbed me of all the seeds of the wild wallflower, gathered by my father at Dolce Acqua." The larva was new to me, and as a seed-feeder I expected some species of *Œcophora;* I described it thus:—

Length 3‴; dull red; head black; second segment rather darker red, and with a subcutaneous dark grey mark of irregular form. Feeds on the seed of the wild wallflower (*Cheiranthis Cheiri*).

I was not a little surprised, when from these larvæ I bred, on the 30th June, three specimens of an insect which was only previously known to me from a specimen which I had received from Professor Zeller under the name of *Gelechia torridella*, when I visited him at Glogau in 1855. This Zellerian specimen was captured near Syracuse on the 3rd of May, 1844. I bred another specimen on the 2nd of July, and another on the 15th of that month.

The perfect insect when sitting had a peculiar posture, the anterior portion of the body being slightly raised, something like the position of *Gelechia Mouffetella* when at rest, which is unlike that of any other *Gelechia* which I know.

I hope next spring the seeds of the wild wall-flower at Dolce Acqua will be again collected—never was a truer instance of the old proverbs—

> "Nothing's lost that a friend gets,"

And

> "It's an ill wind that blows nobody any good."

Wallflower grows wild abundantly in many parts of England, so possibly we may some day turn up *Ypsolophus trinotellus.* The specimen described by Herrich-Schäffer was captured in Corsica—as his Neue Schmetterlinge (of which only three parts have yet appeared) is probably to be found in few libraries. I annex a translation of his description:—

"Like the smallest specimens of *Silacella*, but certainly distinct; the posterior wings narrower than the anterior wings, the costa and inner margin parallel. The head, palpi, back of the thorax, the inner margin of the anterior wings as far as the fold, the hind margin narrowly, and the costa from the middle broadly, leaden grey. At one-third of the length of the wing a deep black longitudinal streak on the fold; at two-thirds a brown grey triangle from the inner margin to the middle of the wing. Cilia dark grey, with the divisional and marginal lines blackish. The antennæ are sharply annulated black and white."

The ground colour of the anterior wings, omitted by Herrich-Schäffer, is bright ochreous.

Ypsolophus verbascellus, W. V. The larva of this species seemed very common everywhere about Cannes, on the plants of *Verbascum;* I began collecting them on the 1st of March, of various sizes, and my friend, the late Mr. Henry Wade Battersby, collected some on the 6th of March, without my having indicated to him that there were larvæ to be found on the *Verbascum.* In this country it has hardly been noticed out of the county of Norfolk; perhaps we rather overlook the species.

Œcophora fuscescens, Haworth. I met with several of this species (which, like *Gelechia mulinella* has a great tendency to run about with its wings a little raised, and almost invariably dies with them over its back) at Pitlochrie in Perthshire. I always imagine that the larva is a rotten wood-feeder, but I am not aware that the species has ever been bred.

Tinagma resplendellum, Stainton. I met with the larvæ of this species in great plenty on the 16th of August at Blair Athol, especially on one individual alder bush; I also found them tolerably common at Dunkeld and not rare at Pitlochrie. I have now a goodly number of fed-up larvæ, and hope next season to breed a tolerable supply of the imago. Strange that we have not yet discovered the habit of the larva of the much commoner *T. sericiellum!*

**Zelleria Phillyrella*, Millière (Iconographie et Description de Chenilles et Lépidoptères inédits. Livraison 18, p. 286, pl. 81, f. 6—8). In the spring of 1866 M. Millière sent me a few insects to name; amongst them was one which I referred to *Zelleria hepariella*, and told him that the larva was suspected to feed on yew; he replied in this I must be mistaken, as the insect in question had been bred from *Phillyrea*, a very different plant from yew.

When I arrived at Cannes last spring M. Millière promised to show me some of the larvæ from the *Phillyrea*, which produced the insect, I had been disposed to refer without any hesitation to *Z. hepariella;* the first week in March we ascended one of the lower hills near Cannes, and from a plant of *Phillyrea angustifolia*, which was most luxuriantly full of blossom, M. Millière, by the aid of his stick and umbrella, obtained from twenty to thirty of a larva quite new to me, and which he assured me would produce the new species of *Zelleria*, for which he proposed the name *Phillyrella*. This larva I have thus described.

Length 4 lines. Greenish at the sides and beneath; the entire dorsal region reddish as far as the sub-dorsal lines; dorsal line darker; spots pale green, very small; head and second segment pale dull yellowish. Attenuated anteriorly, slightly so posteriorly. The young larvæ are green, without the reddish tinge.

Makes webs amongst the flowers of the *Phillyrea*, on which it feeds. The larva was very plump and soft-looking, and I believe many died in consequence of being bitten by their companions; three days afterwards some of the larvæ commenced spinning-up and formed dense white cocoons, similar to those formed by the larvæ of the genera *Argyresthia* and *Swammerdamia*.

The 7th of March I revisited the same spot with my young friend, the late Mr. H. W. Battersby, and though I tried very assiduously for some time I could not succeed in detecting the larvæ *in situ;* they were apparently only obtainable by beating.

The perfect insects began to appear as early as the 2nd of April, whilst I was at Fontainebleau, and most of the specimens were bred before I reached home, and my readers will readily conceive that *Micros* bred on a journey stand a very poor chance of making good cabinet specimens.

However, directly I wrote to M. Millière of this misfortune he very liberally sent me some freshly-bred specimens, and I have now, thanks to his kindness, a decent series of the insect.

Though closely allied to *Z. hepariella*, the anterior wings are narrower, more shining, of a paler colour, with a faintly indicated whitish basal streak just above the fold; on the fold beyond the middle is a black spot, and in one of my specimens (the only one that emerged after I had reached home) there are several small black spots towards the costa. The posterior wings are also paler than in *Z. hepariella*, and the tuft of the head is paler, almost whitish.

That our *Hepariella* in the perfect state frequents yew trees is an undeniable fact, but we sometimes find that perfect insects do frequent plants on which they have not fed in the larva state, and as we have not yet found the larva on yew, perhaps there would be no harm in looking for it elsewhere.

The plant from which *Zelleria Phillyrella* has been bred, *Phillyrea angustifolia*, is one of the *Oleaceæ;* its nearest British ally is privet (*Ligustrum vulgare*); ash and lilac are the only other *Oleaceæ* we find commonly with us. Now at Mickleham, where I have taken *Z. hepariella* in some plenty, there is much privet; might it not be advisable to seek on the privet blossom for the larva of *Hepariella?*

Of the genus *Zelleria* I remarked in the 2nd edition of the Entomologist's Companion, p. 60: "Larvæ entirely unknown—yet I have bred a *Zelleria;* but then I never saw or never noticed the larva. All I know is, that it came out of a white cocoon on an ash-leaf, which I had in a jam-pot by itself, and that the ash-leaf had evidently been eaten." (Ash being one of the *Oleaceæ!*)

This specimen was bred on the 27th July, 1852. My numerous captures in 1862 were made at the end of August, but Mr. Wormald writes me word that last summer he obtained this species by beating yew trees at Box Hill on the 30th and 31st July. If the duration of the pupa state be short as in *Z. Phillyrella,* we may deduce that the full grown larvæ should be found at the end of June and beginning of July.

Gracilaria imperialella, Mann. In the Intelligencer, vol. x. p. 141, August 3rd, 1861, I detailed a chapter of accidents relating to this insect, which I somewhat quaintly termed "Imperial misfortunes." Little did I then foresee that a much greater misfortune than any there chronicled would ere long overtake this species. We had mixed two closely allied species under this name.

Dr. Schleich in the Stettiner Entom. Zeitung, 1867,

p. 452, has given the differential characters and described the transformations of the two species. As both cannot retain the name *Imperialella*, one has had to cede the sceptre, and it became a very intricate problem to decide which was the original *Imperialella.*

The species figured in the 8th volume of the "Natural History of the Tineina," of which the larva was discovered by Herr Ernst Hofmann in 1860, in the leaves of *Orobus niger*, must now no longer bear the name *Imperialella ;* it is the *Hofmanniella* of Schleich.

The larva of the true *Imperialella* mines the leaves of the comfrey (*Symphytum officinale*) in August. Dr. Schleich thus describes it: "The larva mines at first in spiral galleries, closely filled with greenish excrement, but these soon form a larger blotch on the underside of the leaf; the lower cuticle at first remains flat, but afterwards assumes an inflated appearance and becomes brownish. When the mine has attained this stage we can see indications of it on the upper side of the leaf in the brownish spots, which ultimately unite and form an irregular wrinkled blotch from three-quarters to an inch in diameter. The excrement of the larva is then brownish and lies irregularly scattered in the mine. Sometimes we find two larvæ together in one domicile, but often there are a great many mines in one leaf, even as many as twenty. As long as the 14-footed larva is feeding, it has a transparent, pale greenish, almost colourless appearance, with a distinct dark green intestinal canal throughout its length. When full fed (it is about 2½''' long), the dark green dorsal stripe diminishes in size as it deposits its last grains of excrement, and the entire body assumes very quickly, often in a single day, a uniform blood-red colour; only the flat and pointed head and the anterior legs remain brownish. It then quits the mine and spins immediately (in captivity generally on the upper side of a *Symphytum* leaf) a rather firm boat-shaped cocoon; at first whitish, but afterwards brown."

It is now a nice question—have we both species in England? or, if only one, which?

Directly I heard of the appearance of an *Imperialella*-like species from the *Symphytum* larvæ, it occurred to me that this would be the species taken in the Cambridge Fens, and I perceive that the same idea has occurred to Dr. Schleich. The specimen captured near Worcester by the Rev. E. Horton, May 30th, 1860, is probably *Hofmanniella*—my reason for thinking so is that in the original description in the Insecta Britannica, p. 201, I have "head yellowish," and when I saw Mr. Horton's specimen I made a correction in my own copy to "head *white*;" now the *white head* is one of the characters of *Hofmanniella.*

I annex copies of Dr. Schleich's diagnoses side by side:—

GRACILARIA HOFMANNIELLA.	GRACILARIA IMPERIALELLA.
Capite, fronte palpisque niveis;	*Occipite fusco,* fronte nivea, palpis ♂ albis, ♀ *fuscis;*
alis ant. aureis, fascia baseos abbreviata, strigis tribus costæ, maculis tribus dorsi niveo-*argenteis* nigro-marginatis, ciliis apicis *concavo-truncatis* albis, strigula nigra *inferius* notatis, nigroque terminatis.	alis ant. aureis, fascia baseos abbreviata, strigis tribus costæ, *radice* maculisque tribus dorsi niveis nigro-marginatis, ciliis apicis *rotundatis* albis, striga nigra *dissectis,* nigroque terminatis.

The time and habit of the larvæ may be thus stated:—

Larva on *Orobus niger* in *July.*	Larva on *Symphytum officinale* in *August.*

Coleophora lixella, Zeller. For a very interesting observation on the habit of this larva I am indebted to Herr von

Heinemann of Brunswick; on the 28th of April last he wrote to me as follows:—

"Two years ago, when searching for the larvæ of *Coleophora niveicostella* on *Thymus serpyllum*, I found a small case which was formed of a seed capsule of that plant. The larva was also feeding on that plant, but it soon died. Last year, when again searching amongst the *Thymus*, I found some similar cases on the *Thymus serpyllum*, and others on grass, which the larvæ likewise ate. It afterwards appeared that all the larvæ went to the grass, then quitted the old cases, bored into the grass, from which they cut out new cases, when they were recognisable as the larvæ of *Coleophora lixella*. I believe that this is quite a novel fact that a *Coleophora* larva when young should feed on a totally different plant to that on which it feeds subsequently. I have now observed that in all the places where I have taken *Lixella*, or met with the larger cases, *Thymus serpyllum* grows amongst the grass."

With this letter Herr von Heinemann kindly sent me a number of the larvæ. If the intelligence had come from a less competent observer I should scarcely have credited it. However, I was not long left in doubt; the box contained a number of small larvæ in their cases, made of the calyx of a thyme blossom inverted, with the long points sticking out behind. I went into the garden, got a plant of *Poa annua*, put it in a flower-pot, and turned the little strangers on to it; in two hours' time nearly every one had attacked the leaves of the *Poa annua* and commenced mining long blotches, from which, in the course of a day or two, they formed the ordinary elongate, grass-made *Lixella* cases; the empty cases of the young larvæ, left attached to the grass leaves, can be seen by those who are incredulous like myself, as I have carefully preserved such interesting specimens.

I believe *Coleophora ornatipennella* has a somewhat similar habit; at any rate I have received from Herr Anton Schmid of Frankfort a case, as the case of the young larva of that species, which is evidently the calyx of a labiate plant.

Stathmopoda pedella, L. This insect has at last been bred! On the 2nd of August last I received a letter (dated July 30th) from Herr Hofmann of Ratisbon, with the gratifying intelligence that the larvæ collected the previous autumn in the *berries* of the alder had truly produced *Stathmopoda pedella* and in plenty (zwar in Mehrzahl)!!

This larva, which at the time I scarcely expected would produce *Pedella*, and indeed I found it extremely difficult to extract from the alder-berry without squashing it in the attempt, I have thus described, September 28th, 1866.

Length 2½ lines; head brown; second segment dark brown; body pale brown, with a faint reddish tinge, and with a very faint appearance of indistinct paler spots.

A week previously I had make a description, as under, from a larva which had died in the process of extraction.

Length 3½ lines; pale grey, apparently with a darker band across the middle of each segment; head brown; second segment with a brown plate hardly divided in the centre.

Concerning the appearance of the berry I have the following note:—"Found the bases of the seeds eaten, and some of the intervening husk, and much 'frass' towards the core of the fruit. Eventually a squashed larva was eliminated. Q. E. D. 21/9/66."

Batrachedra præangusta, Haworth. On the 19th of June I received from that indefatigable observer Mr. Healy a larva of this species quite full fed, and which spun up immediately after I had described it as under.

Length 5‴; whitish on the back and sides, with broad brown-grey sub-dorsal lines, marbled with whitish; the white spiracles placed in grey rings attached to the lower edge of the sub-dorsal lines; head brown, posteriorly black; second segment with a transverse black plate.

Mr. Healy knows well where and when to look for it, so that next year I hope to make the acquaintance of the feeding larva.

Laverna decorella, Stephens. On the 26th of July I received from Mr. Dorville of Alphington, near Exeter, some pupæ of this species, accompanied by the following remarks: "Whilst searching amongst *Epilobium montanum* for the larvæ of *Laverna subbistrigella*, I noticed some little white spots on the stems, and on cutting open a stem I find them to be the ends of white cocoons protruding from what in the interior of the stem enveloped the pupa of a moth.

"This appearance being new to me, although probably well known to you, I send to you by post a box with some pieces of the stem of *Epilobium montanum* containing the above mentioned pupæ and also one stem, tied round with string, which contains a larva still feeding."

On my replying that these were the pupæ of *Laverna decorella*, Mr. Dorville wrote to express his surprise that in the case of the *Epilobium* stems he had found, there should be hardly any appearance whatever of "galls," whereas he should have expected from the published notices of this species that there would have been some raised excrescences on the stems; now the stems so kindly sent me by Mr. Dorville showed here and there a slight degree of thickening, but would scarcely have attracted the attention of the most observant gall-hunter. In fact it was the protruding ends of the white cocoons which led to these pupæ being found at all.

My own experience of the larva of *L. decorella*, from some kindly sent me by Mr. Barrett two years ago, is that it feeds and grows very slowly, and consumes the plant so extremely leisurely that the natural growth of the plant almost repairs the injury (reminding one of the Abyssinian cow of a distinguished African traveller), and hence by the time the larva is full fed the plant will sometimes retain its normal appearance and the cavity within be little larger than the larva which occupies it. From the pupæ I received from Mr. Dorville I have bred a nice series of the imago.

I could add many more notes from observatious kindly furnished by many correspondents, but the above must suffice for the present.

The two following observations have been kindly furnished to me by Baron von Nolcken during his recent visit to this country:—

"*Chalybe* (*Psecadia*) *pyrausta*. I first met with some worn specimens of this species about five years ago at Pichtendahl on the island of Oesel; I afterwards obtained finer specimens, and on sending some of them to Professor Zeller he confirmed my conjecture that it was the true *Pyrausta* of Pallas.

"The following notice, I should observe, may not be perfectly exact, as I cannot place implicit reliance on the accuracy of my memory.

"In the most forward seasons *Pyrausta* began to fly as early as the end of April, and was already over about the middle of May. In 1867 the first made its appearance the beginning of May, and it continued till after the 20th of that month. With us the trees are just unfolding their leaves when this species occurs, and when the woods have assumed their summer dress *Pyrausta* is over. It flies of its own accord in the mid-day sun, though from its dark colouring is very hard to see, but it is not to be started from the grass by beating, and, to avoid pursuit, lies still as though dead. I have met with it singly about 10 a.m. on grass stems or low down on the trunks of trees. The smaller ♀ is very difficult to find, since it seems to fly very rarely. In the course of several years, though I have taken many of the ♂, I only found one ♀ in the grass. Its head-quarters was the margin of a broad ditch, which was richly decked with a variety of plants and surrounded by young trees. Amongst the lower plants on the borders of this ditch I had my suspicions that *Thalictrum aquilegifolium* was possibly the food of the larva, because in the neighbourhood this plant did not again occur, no more did the *Pyrausta.* In 1866 I had the good fortune to find the larva of *Pyrausta* on the *Thalictrum* in July. It lives singly, though there are frequently from two to four on one plant, exposed on the surface of the leaves, and drops down directly the plant is shaken ; on the ground it wriggles about actively and speedily escapes. It has the usual form and varied colouring of the larvæ of the genus *Psecadia.* Orange-yellow spots on the darker ground colour form several longitudinal stripes along the back and sides; I cannot however describe it more in detail from recollection.

"It is easily reared, but the larvæ are often ichneumoned. From the larvæ I obtained almost as many females as males. The cocoon is white, the pupa black-brown.

"The last larvæ spun up towards the end of August.

"In the middle of winter I brought the pupæ into the heated room, and the moths made their appearance in about two (?) weeks."

"* *Swammerdamia conspersella*, Tengström. The larva of this species feeds (in June ?) on the crowberry (*Empetrum nigrum*), amongst which it forms a web with fine white threads, and, in the middle of this, it prepares itself a case-like cocoon for the small pupa. I found it very plentifully at Pichtendahl on a dry moor."

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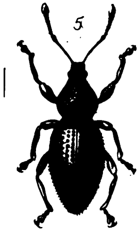

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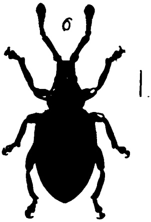

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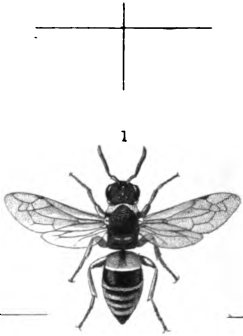

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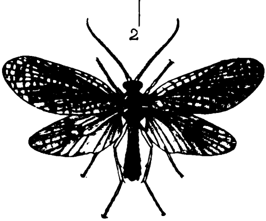

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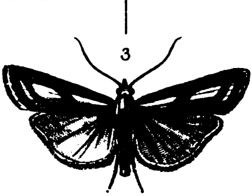

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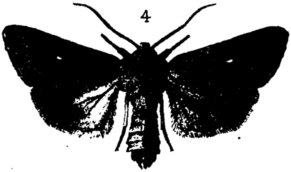

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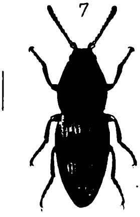

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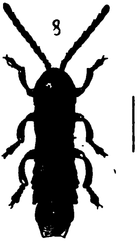

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B. D. WALSH.

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EXPLANATION OF PLATE.

Fig. 1. *Odynerus basalis*, Smith, see page 73.

2. *Neuronia clathrata*, Kolenati; (see Ent. Month. Mag. vol. iv. p. 204.)
3. *Crambus myellus*, Hübner, see page 126.
4. *Leucania albipuncta*, W. V., see page 124.
5. *Barypeithes pellucidus*, ♂, Schönherr, see page 45.
6. *Cathormiocerus socius*, ♂, Schönherr, see page 43.
7. *Cryptohypnus sabulicola*, ♀, Boheman, see page 40.
8. *Phosphænus hemipterus*, ♂, Geoffroy, see page 41.

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COLEOPTERA.

NEW BRITISH SPECIES, CORRECTIONS OF NOMENCLATURE, ETC., NOTICED SINCE THE PUBLICATION OF THE ENTOMOLOGIST'S ANNUAL, 1868.

BY E. C. RYE.

JUDGING from the work of the past year recorded in the following pages, we may, I think, with confidence assert that Entomology is not yet at a stand-still for want of material in this country, and (considering the very limited number of working Coleopterists) that we have acquired a very fair further instalment towards accordance with our continental brethren.

It will be seen that I have to enumerate one new genus (*Actidium*, Matth.), and three new species (*Thyamis agilis* and *Tomicus Marshami*, mihi, and *Ptilium Halidaii*, Matth.), besides about thirty good species added to our lists, among which will be found two *Cryptohypni*, an *Omias*, *Apion* and *Euplectus*, and a *Cathormiocerus*, *Magdalinus*, and *Trachys*. The remaining notices, about forty in number, refer to additions either doubtfully correct or possibly imported, corrections, "splits," &c. *En revanche*, if we follow Thomson, we have lost our old friends *Pœcilus cupreus*, *Omalium pusillum*, and *Hydaticus transversalis*.

Since the publication of the last "Annual," several works, or parts of works, have appeared, which are likely to be of use to the English Coleopterist. Of these (not to particuıarize the numerous papers and scattered notices contained in the Transactions of the different foreign Entomological Societies) I may mention the commencement of the second half of vol. i. of the "Insecten Deutschlands," containing the *Hydradephaga*, originally the work of the late Prof. H. Schaum, but published after his decease, and long out of its place in the series, under the editorship of Herr von Kiesenwetter, who appears to be exclusively answerable for the *Gyrinidæ*. It is to be hoped that those among us who have been accustomed to complain of the want of a text-book for this obscure group will now set to work, clear up their doubts, and increase our lists by reliable species. The completing parts of the original scheme of Thomson's "Skandinaviens Coleoptera" have also duly come to light; followed by the first instalment of a supplementary series of very copious additions, revisions, tabulations and corrections. It is needless to say more of this work at present, as considerable results from its publication, with regard to our Fauna, will be noticed in the following pages.

Herr Georg Seidlitz has (Berlin. Ent. Zeit., xii, 1868, Beiheft) revised the European *Otiorhynchides sensû stricto*; and his work will be found a worthy pendant to that of Stierlin, and useful to British Coleopterists.

The introductory portion of M. Fauvel's "Faune Gallo-Rhénane" (which can hardly fail to find a certain amount of favour here, seeing how the "Faune Française" of Fairmaire and Laboulbène has been adopted) has very recently been published, but has, as yet, not reached a stage likely to interest English Coleopterists. It is elaborated with the care and superfluity of detail characteristic of the best French scientific works; being accompanied by elegant maps, exhausting all possible tabulations of isothermal lines, limits of particular vegetation, &c., and containing almost everything relating to French and Rhenish *Coleoptera*, from the widest views of Geographical and Geological causes down to a voluminous Directory of the names and addresses of all (French and German) Coleopterists,—the idea of which is confessedly taken from similar lists of British Entomologists in former "Annuals,"—with a separate chapter on the principal public and private collections.

Another Berlin Catalogue has also appeared, under the auspices of Dr. F. Stein. This, however, is professedly not posted up to the day; for the author, in his preface, whilst expressing a hope that the most excellent new things have not escaped his notice, confesses nevertheless that certain species, especially those of English authors, have remained unknown to him. He excuses himself by stating that he has not easily got together the very copious literature published during the six years that have transpired since Prof. Schaum's death (though M. de Marseul, malgré his other somewhat voluminous Entomological occupations, has contrived somehow to do so). Intending to notice this Catalogue in another place, I abstain here from pointing out the rather numerous errors that it contains.

Of works by British Coleopterists there is little to record, beyond disconnected notices. Dr. Sharp, however, has (in the Entom. Monthly Mag.), in addition to an enumeration, &c. of our species of *Malthodes*, described our *Gyrinidæ*, prefacing his descriptions with a most careful and interesting account of their structural peculiarities. As regards, however, one or two of the most puzzling species which he very clearly defines, I admit that I fail to connect his exponents with the original descriptions. But it is precisely in these obscure groups that the thankless task of working out even an approximation to the truth is most needed; and I may here remark that I trust in the next "Annual" to have to record the result of a very difficult work which Dr. Sharp has now nearly completed, viz., the revision of the genus *Homalota*, for which purpose he has burthened himself with the difficulties or entire collections of a very great number of British and Continental Entomologists.

I have myself (in the same Magazine) described our *Protinides* and species of *Heterothops;* and some able original observations on the œconomy of certain *Xylophaga* have appeared (E. M. M.) from the pen of Dr. T. Algernon Chapman, an entire novice as regards *Coleoptera*, but whose acumen has gone far to prove that the Welsh border counties are an unworked mine of beetle-wealth,—*Rhizophagus politus, Pediacus, Otiorhynchus ligustici, Cryphalus binodulus, Hylurgus pilosus, Tomicus dryographus* (male), *Aphodius porcus*, &c., having all occurred to him near Abergavenny.

Mr. G. R. Waterhouse, too long an absentee from the very small band of working British Coleopterists, has at length obtained from Herr Kutschera of Vienna the return of a series of most of the British *Halticidæ* known to us in 1863, when they were sent for the latter's opinion. Herr Kutschera's remarks upon these species will be found in "The Entomologist's Monthly Magazine," vol. v, p. 163 et seq., and such of them as call for special comment will be noticed in this article. Unfortunately, the length of time that has been occupied by Herr Kutschera in their examination has allowed of the introduction into our Lists of the new species, &c., resulting therefrom through the recently defunct Wien. Monatschr., and other channels, and notices of them have appeared in former "Annuals."

The alterations in the nomenclature of the species in Wat. Cat. proposed by Herr Kutschera are as follows:—*Sphæroderma cardui*, Gyll., for *S. testacea*, and *S. testacea*, Fab., for *S. centaureæ; Aphthona cærulea*, Payk., var., for *A.*

pseudacori; A. venustula, Kuts., for *A. euphorbiæ; A. cyanella*, Redt., for *A. atro-cærulea; Phyllotreta antennata*, Ent. H., for *P. nodicornis* (but Marsham's name is alone a description, and the date of his Ent. Brit. is 1802,—that of Ent. H. being 1803;—his *Psylliodes picina* and *Apteropeda orbiculata* being, moreover, allowed by Herr Kutschera to have priority over the *rufilabris* and *graminis* of Ent. H.!); *P. obscurella*, Ill., for *P. pœciloceras; Chætocnema subcærulea*, Kuts., for *C. Sahlbergii; Thyamis castanea*, Foudr., for *T. brunnea; T. brunnea*, Redt., for *T. lurida; T. membranacea*, Foudr., for *T. minuscula; T. rubiginosa*, Foudr., for *T. flavicornis; T. femoralis*, Marsh., for *T. exoleta; T. thoracica*, All., for *T. fuscicollis; Psylliodes cuprea*, Ent. H. for *P. cupronitens; P. instabilis*, Foudr., for *P. picipes; P. affinis*, Payk., for *P. atricilla*, and *Apteropeda orbiculata*, Marsh., for *A. graminis*.

Many of the above corrections have already been incorporated in our lists. It will be observed that Herr Kutschera adopts Mr. Waterhouse's alterations with regard to *Thyamis jacobææ* and *T. tabida;* and it is gratifying to observe in more than one quarter of the continent a growing inclination to recognize (though somewhat tardily) British authors.

Mr. G. R. Crotch, in a succinct analysis (Newman's "Entomologist," No. 53) of such of the new species and alterations of nomenclature described and contained in Thomson's Supplement as are likely to be of interest to British Entomologists (the majority of which species will be mentioned at greater length in the present "Annual"), has noted the following identifications, &c.:—

Bembidium Sahlbergii, Zett. = our *B. Schüppelii* (*Sahlbergii*, Dej., = *Grapei*, teste Mäklin. *Hydroporus hyperboreus*, Gyll., = *H. assimilis*, Payk., var. *H. Bohemani*, Thoms., = *H. nitidus*, Sturm, forte (*oblongus*, Steph.). *Quedius resplendens*, Thoms., = *Q. lævigatus*, Gyll., var

Autalia puncticollis, Thoms., = Dr. Sharp's prior described species of that name. *Aleochara* (*Polystoma*) *nitidula*, Thoms., Supp. (the *obscurella* of his vol. iii, nec Grav.), = the prior described *A. grisea*, Ktz.; *grisea*, Thoms., = *Kirbyi*, Steph. (*algarum*, Fauvel). *Gyrophæna puncticollis*, Thoms., = *G. Poweri*, Crotch. *Evæsthetus pullus*, Thoms., = *E. ruficapillus*, Lac. (*ruficapillus*, Thoms., being *læviusculus*, Mann.). *Scydmænus denticornis*, Thoms., = *S. claviger*, Müll. and Kunze. *Lathridius crenicollis*, Thoms., = *L. testaceus*, Steph. *Corticaria hirtella*, Thoms., = *C. fulva*, Mann. *Paramecosoma* (*Micrambe*) *pilosula*, Thoms., = *Cryptophagus vini*, Er.

Mr. Crotch has also, in No. 51, p. 47, of the same periodical, given short notes, tending in his opinion to confirm the indigenous origin of certain doubtfully British species. The first of these, *Hispa atra*, Lin.,—figured by Stephens, who says he possesses two specimens of it, one taken near Rochfort, in Essex, and the other from the Marshamian Cabinet, but both of which Mr. Crotch considers very doubtful,—is also noticed and figured (though this appears to have escaped subsequent observation) by Barbut, "Genera Insectorum of Linnæus," 1781, pl. iv, Gen. 12, who gives details of its capture by himself near Paddington, and which capture Mr. Crotch thinks satisfactorily proved. It does not seem clear, however, why Stephens' express statement with regard to one of his examples should be less worthy of credit than that of Barbut. Mr. Crotch thinks that very probably the species is not really indigenous; an opinion in which most British Coleopterists will concur. *Cassida ferruginea*, Fab., is considered by Mr. Crotch decidedly indigenous, from the quotation by Dillwyn, in his "Coleopterous Insects of Swansea," of a letter from Dr. Leach, wherein the latter states that he possesses the true insect of that name, taken at Woodlands, Devon, and that he has it also from Sweden and Germany. The capture of *Eumolpus pygmæus* by Dillwyn, we are reminded by Mr. Crotch, is very circumstantially related, and is confirmed by Dillwyn's subsequently finding another specimen in the same place. *Scydmænus rutilipennis*, Müll., appears, according to Dillwyn, to be included as a Swansea insect in Dr. Leach's MSS. The British Museum specimen Mr. Crotch has little doubt was sent to Dr. Leach by his correspondent, Herr G. Kunze, of Leipsic; but no reasons are given for this opinion.* *Astrapæus ulmi*, Fab., will receive little corroboration as British from the republication of Dillwyn's statement of Leach's opinion, that one of the Swansea *Brachelytra* belonged to the genus *Astrapæus*, Latr.; and an additional reason for the expulsion from our lists of *Philonthus cyanipennis*, Fab., is afforded by Dillwyn's repudiation of Stephens' reference of that insect to Swansea.

Mr. Crotch also notes Dillwyn's statement that *Psylliodes hyoscyami* was abundant at Swansea, and says it has not occurred of late years. It has been taken (sparingly) by Dr. Power, Mr. Waterhouse, and myself (Shirley).

With respect to noteworthy captures during the past season, I find so many more important subjects calling for special and unavoidably lengthy mention, that I must reluctantly either altogether omit my usual references, or condense them into a small space. Choosing the latter alternative, I will briefly note, that *Dytiscus lapponicus* has been found in numbers at Mull and Donegal (apparently the first capture of the insect in Ireland) by Mr. Somerville, who seems to have a "divining rod" for his water-net stick, as regards this rare species at least. *Deleaster*, long only found by single specimens, and at rare intervals (save by one metropolitan collector, who has for some years possessed the secret of its habitat), has been taken on the wing near London in numbers by Messrs. Douglas, Scott, and Bishop, and also (singly) by Mr. Somerville, at Glasgow. *Potaminus,* whose habits have remained unrecorded, in spite of the numerous midland-county captures of it, is now found near Scarborough, where Mr. Lawson states it to occur in moss on timber waterfalls, and submerged pieces of wood. *Macronychus* should not be far off. A second example of *Anthicus bimaculatus* (now in my collection) is recorded by Mr. Morley. Mr. J. Kidson Taylor, with Mr. Hardy, has taken several of the Rev. A. Matthews' *Eros* in Sherwood Forest, out of rotten birch. I have compared some of these with the Killarney species recorded by me as *affinis,* with which they are identical. It has, I believe, not been recorded, that a second capture of more than one example of the Killarney insect was made by Mr. Hardy. Mr. Taylor has, also, captured more than one of the very rare *Ceuthorhynchus angulatus* (*impressicollis*) near Manchester. *Mesites Tardii,* somewhat unexpectedly, appears in profusion on our north-east coast (which causes an exhaustive résumé of all its British localities by Mr. Sidebotham); and its detector, Mr. T. Wilkinson, records, from the same quarter, *Pseudopsis* and the rare *Atomaria fimetarii.* Mr. Wilkinson has also (as has Dr. Sharp) bred several specimens of *Carida flexuosa* from fungus on Alder. *Coccinella labilis* has re-appeared in some numbers, having been again taken at Herne Bay and (by Dr. Power) at Weybridge. Mr. Sidebotham has substantiated *Aphodius villosus,* from Llandudno, and Mr. Bold notes *Lithocharis maritima,* only hitherto taken here in the Isle of Wight, at Newcastle-on-Tyne. But these recollections must not be set down as representing more than a random selection out of the many rare and interesting species taken during the past season. Want of space alone prevents me from giving a goodly list; though the hot summer resulted in anything but favourable conditions for the Coleopterist, for whom are no flocks of *Daplidice*, *Lathonia*, or even *Hyale*.

---

* Denny expressly records this specimen as taken at Swansea, and, as he believed, by Mr. Millard.

In the pages of the "Annuals" will no longer be found the accustomed notices of captures of rare *Coleoptera* by Charles Turner, who, to the detriment of our collections, died during the past year, and with whom probably (as far as we are concerned) died very many of the species he used to take. Our readers will require no reminder of the numerous good things (chiefly wood-feeding beetles) that have for some years past been discovered by him, for the insects he specially affected were of comparatively large size and belonged to groups of which none but the commonest forms are to be obtained by ordinary collecting. But only those who, like myself, have heard from the inhabitants of the distant localities in which he worked, accounts of his ways and means, and have seen his colossal ravages *in sitû*, can be aware of the hardships and toil he endured in the pursuit of these good things. There can be no doubt that he possessed strong determination and perseverance, ability to work very hard under very discouraging circumstances, an extremely quick eye and retentive memory (which enabled him to profit by the instructions of the "book-learned," for whom, however, he in unguarded moments expressed a copious contempt), great natural shrewdness, and a power of concealing his innate artful nature beneath an apparent frankness of manner. For, to use the mildest language, his natural mental bias was very distinctly in an oblique direction. But for this, he would have been supported to any extent by his patrons, whom, in spite of repeated condonements, he perpetually again deceived. I suppose it will never now be known how many actual specimens of his rarities were taken by himself and his genial partner; but they must certainly have been very much larger in number than is generally believed. And it is sad to think how the contents of many "screws" of his finest New Forest, Scotch and Sherwood beetles are probably now "wasting their sweetness in the desert air" of unappreciating possessors, or have been lost or destroyed as valueless.

Turner had a hard life, and, of course, no education or training save in that rough school that takes less pains than ours to hide the worldly main rule of getting the better of one's fellows. And he had at times rudimentary instincts of justice, which impelled him to make good former deficiencies. We certainly could have better spared a better man.

1. LEBIA CHRYSOCEPHALA, Motschulsky, Bull. Mosc., 1864, 225 (*Lamprias*); E. C. Rye, "The Entomologist's Monthly Magazine," vol. iv, p. 190.

It seems not impossible that the small and constant race of *L. chlorocephala*, found at Shirley, and never accompanied by the type form, may be identical with Motschulsky's insect, which is stated to be of the colour and build of *L. chlorocephala*, but smaller, with the elytra a third shorter, and the thorax less transverse. The punctuation of the interstices is not to be relied on as a character.

2. ANCHOMENUS MŒSTUS, VIDUUS and EMARGINATUS.

Mr. G. R. Crotch (Newman's "Entomologist," No. 53, p. 66) states that M. Thomson, in Skand. Col. Supp. before referred to, maintains the distinctness of these species, and enumerates their differences.

M. Thomson, however, makes no reference to any distinguishing marks for *A. emarginatus*; but, in addition to the wider thorax, brassy colour and more deeply impressed though less closely punctured striæ of *viduus*, remarks that in that species the elytra have the shoulders less prominent, so that they are on a level with the commencement of the sutural stria, and that there are only seven or eight setæ on the inner side of the posterior tibiæ; whilst in *mœstus* the shoulders are more acutely prominent, with their highest point above the commencement of the sutural stria, and the setæ are nine or ten in number. He notes, also, that he has never found any transition between the two insects with respect to colour.

A. emarginatus, recorded as British by Stephens and Dawson, is deep black, with the elytra elevated at the shoulders, so that their entire base appears emarginate. Thomson appears so certain about the specific value of this insect that neither in his 1st vol. nor in his Supplement does he give any particular or differential characters for it. Whilst entirely agreeing with him in considering *viduus* and *mœstus* as distinct, I cannot help thinking that there is no foundation for specifically separating *emarginatus* from the latter, as an abnormal elevation of the shoulders is common in very many species of *Anchomenus* and others of the *Geodephaga* (vide Schaum, Ins. Deutschl., i, 421). For the same reason, I do not think any value can be attached to his above-mentioned character of greater or less elevation of shoulder to the elytra, as regards *viduus* and *mœstus*.

Whether Thomson be right in this instance or not, it is scarcely possible to avoid admiring the possession by him ot so strong a belief in "splits" simultaneously with an equally strong synthetical disposition,—the latter evinced by his giving (vol. ix, p. 24) *Bembidium æneum* as specifically identical with *B. biguttatum*, from which it differs in its marine habitat, its flatter build, less brilliant colour, darker legs and antennæ, more transverse thorax, of which the sides are less rounded behind and the posterior emarginations more evident, its unspotted elytra, which are more delicately striated, its dull alutaceous head, &c. Difference of habitat alone, even of a much less pronounced description than that between *B. æneum* and *B. biguttatum* (for instance, the nice distinction drawn in the case of *Scydmænus hirticollis* and *fimetarius*, where rotten vegetable matter in hot-beds and dead leaves in woods are opposed to each other), is usually considered a strong test of specific value by Thomson; who, moreover, has no hesitation in separating *B. Mannerheimii* from *B. guttula* as a thoroughly good species, though these two are assuredly more closely allied than *æneum* and *biguttatum.* Curiously enough, he states *Mannerheimii* to be *æneous* in colour, and not "cæruleo-micans." All the specimens of it that I have observed are almost purple-black.

3. PTEROSTICHUS CUPREUS. Linn.

Mr. Crotch, l. c., draws attention to Thomson's division of this (supposed) well known species into two, both of which occur in England. The larger of these, *P.* (*Feronia*) *puncticeps*, Thoms., Skand. Col., ix, p. 35, represents the *cupreus* of our Catalogues, and the smaller, *P.* (*Feronia*) *pauciseta*, Thoms., loc. cit., 36, is certainly (as Mr. Crotch suggests) the *versicolor* of Wat. Cat. It is satisfactory to find that our "rule of thumb" separation of these two insects is (unknowingly) endorsed and substantiated by the acute Swede; for no characters have, as far as I know, been published for the old *versicolor*, Stephens' species of that name, professedly Sturm's, having nothing but its smaller size to substantiate it; Dawson merely stating that *versicolor*, Sturm and Stephens, is a rather smaller and narrower variety of *cupreus;* and Schaum quoting it as synonymical with that insect, and not even alluding to it as a variety.

P. puncticeps, the larger and wider of Thomson's two species, has the front of the head delicately but distinctly punctulate; the thorax almost transverse, scarcely at all narrower at the apex than at the base, which is closely (in the middle more delicately) punctured, and with the small outer basal fovea parallel with the lateral margin and rather nearer to it than to the inner fovea; the striæ of the elytra delicate, and rather closely but not strongly punctured; and with a row of about ten fine bristles towards the lower part of the inner side of the posterior tibiæ.

P. pauciseta, besides being smaller and narrower than *puncticeps*, has the front of the head entirely without punctuation; the thorax rather longer, narrower at the apex than the base, which is almost punctureless in the middle, and with the small outer basal fovea well defined, obliquely directed inwards, and equidistant between the lateral margin and inner fovea; the striæ of the elytra rather (in some cases very much) deeper, less closely but more strongly punctured, with more convex interstices, and the row of bristles on the inner side of the posterior tibiæ about six only in number. On the underside, the sides of the metasternum are rather more strongly, and the propleuræ behind obsoletely, punctured. On the whole, also, according to my experience, this species is the more brightly coloured of the two. Both of them seem to have the red-legged form, but the *dull* blue or black varieties, as far as my observation goes, are only found in *P. puncticeps.* Out of all the specimens of both hitherto examined by me, I have found only one that is in the least degree intermediate between the two species.

4. **Haliplus varius**, Nicolai, Col. agr. Hal., 34; Schaum, l. c., 14; T. J. Bold, Ent. M. Mag., vol. iv, p. 284.

Mr. Bold records the capture, in ponds near Newcastle-on-Tyne, of a *Haliplus* which he refers to the *varius* of Nicolai and Schaum. He has kindly (as usual) allowed me to examine his insects; but I must admit my inability to consider them anything but *confinis*, var. (*lineatus*, Aubé).

Erichson and Aubé both considered Nicolai's species as a var. of *obliquus*, with the vertex and anterior margin of the thorax black: but Schaum identifies Erichson's var. of *obliquus* and Aubé's var. of his *lineatus*, which is less and paler than the type, and with the thorax narrowly marked with black along the anterior and posterior margins, as the true *varius*. The specimens of Aubé's var. are recorded by him as taken by M. Reiche in brackish water near Ostend, and are apparently the types of Fairmaire's *maritimus*.

From Schaum's description, the true *varius* is very like *obliquus*, but always smaller, broader at the shoulders and more rotundate, with the black lines on the elytra running here and there together into spots, the four inner lines being less interrupted than in *obliquus*. The thoracic basal strigæ are much finer than in *confinis*, and sometimes are scarcely perceptible.

5. Hydaticus transversalis, Auct.

Mr. Crotch, l. c., notes the division by Thomson of the insect hitherto known to us by this name into two species, only one of which Mr. Crotch can find in his collection.

These species are as follows:—

H. punctipennis, Thoms., Skand. Col., ix, p. 87, in which the inner posterior claw is not half the length of the outer; the elytra are very delicately but distinctly punctulated, especially towards the sides, with the lateral yellow band interrupted by black lines; the intermediate tibiæ are ferruginous, not pitchy; and the front tarsi in the male have the second joint very delicately strigulose, and the claws not elongate, but strongly and equally curved;—

And *H. lævipennis*, id., l. c., p. 88, which is rather the larger of the two, with the black fascia of the thorax not produced above the middle, the elytra entirely smooth and uninterruptedly banded on the sides, the intermediate tibiæ pitchy, the inner posterior claw not so much shorter than the outer, and the second joint of the front tarsi in the male closely and strongly strigosely coriaceous, the claws being elongate, suddenly curved at the base, toothed, and subdilated in the middle beneath. Of this insect the female appears to be unknown.

Our British species appears to be *H. punctipennis.*

6. ILYBIUS SEXDENTATUS, Schiodte.

Mr. Crotch, l. c., notes Thomson's present opinion that this insect is merely a variety of the male of *I. obscurus*, in which the intermediate tarsi have the outer claw beneath widened into a toothlet in the middle. In Ins. Deutschl. i, pt. ii, 92, the same opinion is expressed, and it is pointed out that the rounded apex of the outer posterior claw in the male, characteristic of *obscurus*, is preserved in the var. *sexdentatus.* Mr. Crotch states that he has noticed that *sexdentatus* and *obscurus* rarely, if ever, occur together. From Thomson's "*nonnisi* distinctus" in his original comparison of the two insects (he usually says "*mox*" or "*optime*," even in *very* closely allied species), it may be believed he never had much faith in *I. sexdentatus.*

7. AGABUS ERICHSONI.

A. nigro-æneus, Erichson, Thoms., nec Marsham.

The late Dr. Schaum notes (l. c., p. 102) that although the *nigro-æneus* of Marsham is not, as Erichson assumed, the species known to the latter by that name, which does not occur in England, but is *chalconotus*, it does not seem to him that a change from the name employed by Erichson is necessary. But to adopt this idea would be simply to increase confusion, and be at variance with the recognized rule in similar cases. I accordingly propose to give the above name to the German insect; which, as it occurs also in Lapland, will probably be found here eventually. It appears to be closely allied to *chalconotus*, but to be considerably larger than that species (for which the size is accidentally omitted in Ins. Deutsch.), slightly more convex, delicately *strigose*-reticulate, not quite so shining, with the margins of the thorax and elytra lighter, and the underside pitchy, instead of black.

In the male the anterior claws are unequal, the inner one being sub-dentate; the three basal joints of the hind tarsi are set with swimming-hairs, and the apex of the last ventral segment of the abdomen is longitudinally strigose. In male *chalconotus* the anterior claws are equal, and only the basal joint of the hind tarsi is set with the swimming-hairs.

The specimen mentioned by me in Ent. M. Mag., vol. v, p. 46, as *nigro-æneus*, Marsh., is certainly only a light-coloured var. of *chalconotus*.

In corroboration of Prof. Schaum's verdict that Marsham's *nigro-æneus* is only a synonym of the slightly anterior *chalconotus* of Panzer, I may (in addition to Mr. Waterhouse's opinion to the same effect recorded in his "Catalogue") remark that in my copy of Marsham's Ent. Brit., which is supplemented by MS. notes by his contemporaries, Mr. Wilkin and Dr. Leach, there is a statement to the effect that *chalconotus* and *nigro-æneus* are not distinct species.

8. AGABUS UNGUICULARIS, Thomson, Skand. Col., ix, p. 101 (*Eriglenus*); G. R. Crotch, l. c., p. 67.

Mr. Crotch, noting Thomson's recently described species in this genus, states that one of them, *A. unguicularis*, resembles *A. affinis* very closely, from which it differs principally in the shape of the laciniæ (not to be confounded with the laminæ of the posterior coxæ) of the metasternum, and that all his examples (I presume, of *A. affinis*) belong to this species.

Thomson distinguishes his *unguicularis* from *affinis*, Payk., by its body not being laterally parallel, its thorax having pitchy sides and being more narrowed in front, and its head being smaller. The characters by which he separates his genus *Eriglenus* (which includes *unguicularis*) from his *Gaurodytes* (in which he places *affinis*) are the narrow, linear, lateral laciniæ of the metasternum, the invariably carinated process of the prosternum, the strôngly margined thorax, and slightly enlarged anterior tarsi.

9. AGABUS AFFINIS, Payk.; Thoms. (*Gaurodytes*); *nec* Schaum; D. Sharp, Ent. M. Mag., vol. v, p. 17.

Dr. Sharp records the capture near Dumfries of four specimens of what he considers to be the true *Gaurodytes affinis* of Thomson; and acquiesces in Mr. Crotch's opinion that the *affinis* of our lists and collections must be referred to *E. unguicularis*, Thoms.

In addition to Thomson's characters for the two species above mentioned, Dr. Sharp notes that the broad turned-under margin of the base of the elytra is of a rather obscure red in *unguicularis*, and quite black in *affinis*, which insect is altogether of a darker and blacker colour; and he also gives instances proving Schaum's opinion, that Thomson's genera cannot stand, to be correct.

Schaum's *affinis* appears to be *unguicularis*.

10. AGABUS SOLIERI, Aubé, Hydroc. et Gyr., 359; Schaum, l. c., 98; D. Sharp, Ent. M. Mag., vol. iv, p. 232.
sexualis, Reiche; Crotch, Cat. Brit. Col. Ed. 2.

Dr. Sharp notes the above corrections in the name of one of the Reichean Scotch enigmas (of the descriptions of the others of which, in E. M. M., loc. cit., I have given a translation); and also records the capture of a female specimen of the insect itself high up on Mamsoul, Inverness-shire. It appears to differ from *A. bipustulatus* in its smaller thorax, the sides of which are rounded and the base straight, with obtuse posterior angles. The whole insect seems also to be narrower, flatter, more finely striated and duller; and the anterior claws in the male are somewhat differently constructed.

Dr. Mac Nab subsequently (E. M. M., iv, p. 283) records the capture by himself of a female specimen near Dumfries, at an elevation of 1800 feet, in company with *A. bipustulatus*, and of another female near Loch Brandy, Clova.

11. HYDROPORUS GLABELLUS, Thomson, Skand. Col., ix, pp. 80, 296; G. R. Crotch, l. c., p. 66.

Mr. Crotch records this species as not rare in England, and adverts to the still existing confusion amongst its allies.

It is, I believe, the insect hitherto known to us as *H. nigrita*, Fab., and is described by Thomson as like *H. pubescens* in size and almost in build, but with the elytra nearly glabrous, less rounded at the apex, more sparingly punctured, with the row of larger punctures scarcely perceptible, and the disc of the thorax smooth.

As Mr. Crotch notes, Thomson, in his Supplement, inverts the names of *H. pubescens* and *H. nigrita*, considering *nigrita* of Erichs. and Skan. Col., vol. ii, to be the true *pubescens*, Gyll., and the *pubescens* of Skan. Col., vol. ii, to be true *nigrita*, Gyll. To add to this confusion (already bad enough as far as we are concerned, through *our nigrita* being apparently neither of these two insects), there is a printer's mistake in the supplemental reference to the pages of the second vol. of Skand. Col.; both species being referred to as at p. 23, instead of p. 24, of that vol.

Thomson separates his present *nigrita* from his present *pubescens* by its oblong-oval shape, the fuscous sides to its elytra, and the stronger punctuation of its metasternum, sides of posterior coxæ and base of abdomen. His *pubescens* he states to be of the build of *H. planus*, but two sizes smaller, more obtuse on each side, with entirely black antennæ and the last joints of its antennæ shorter; and, in addition to the characters above mentioned, gives the dense pubescence of its elytra as another characteristic for it, compared with *glabellus*.

12. HYDROPORUS ELONGATULUS, Sturm; Thoms., Sk. Col., ii, 29, ix, 82; Schaum, l. c., 68; T. J. Bold, Ent. M. Mag., vol. iv, p. 284.

Mr. Bold records a male specimen of this species, taken on a moor at Lanercost, Cumberland, and compared with continental types from Mr. Crotch, with which his insect is stated to agree in every respect, save in its slightly smaller size. Mr. Bold remarks that it closely resembles *H. tristis*, but is rather larger, flatter, and more obscure than that species, with a wider head and thorax and more pubescent elytra. The angle formed by the junction of the sides of the elytra with the sides of the thorax appears, also, to be still more obtuse.

13. GYRINUS NATATOR, Auct.

Dr. Sharp, in his excellent paper on our *Gyrinidæ* referred to in my introductory remarks, notes the occurrence in Britain of two well-marked races of this insect, considered by Erichson and Suffrian as distinct species, viz.: —

(*a*) *G. mergus*, Ahr., N. Schr. Hall. Nat. Ges., ii, 43. Broad, not so much narrowed before and behind, the inner striæ evidently finer than the outer, especially towards the suture, but always distinct and perceptible for their whole length; common in the south of England, but not occurring in Scotland. Kiesenwetter, l. c., states this form to have the breast and apex of abdomen ferruginous.

(*b*) *G. natator*. Narrower, the sides more rounded, and the internal striæ very obsolete or entirely wanting towards the base; abundant in Scotland, rare further south.

To the above forms Aubé adds another, the *marginatus* of Germar, in which the breast and apex of abdomen are black.

Dr. Sharp also records, from Deal, a small series of specimens agreeing closely with each other, and possessing the form of (*b*) with the punctuation of (*a*).

14. **GYRINUS DISTINCTUS**, Aubé, Iconog., v. 385; Hydroc. et Gyr., 666; Suffr.; (Kies.) Schaum, l. c., 141.

Dr. Sharp, loc. cit., records his opinion that this insect is only a variety of *G. bicolor*, Payk., and that it usually represents that species in our collections. The type *bicolor*, of which Mr. Bold has a few specimens taken in Durham, and which is also in Mr. G. R. Crotch's collection, is larger than the insect above alluded to as *G. distinctus*, and has the sides more parallel, and the elytra longer, with the apex of each individually more rounded, whereby the external angle is more evident in the latter. But Dr. Sharp states that variations in all these points occur.

From Aubé's account his *distinctus* is like *natator*, from which he states it to differ in its rather more elongate and less regularly ovate form, its elytra being slightly obconic; and by the reflexed part of its thorax and elytra, and especially its breast and the apex of its abdomen, being always darker. He does not mention it in connection with *bicolor*, from which he separates it by seven other species. De Marseul places it immediately next after *natator* and before *colymbus* in his Catalogue. Kiesenwetter's *distinctus* is evidently the same as Aubé's: he thinks it probable that it may be conspecific with *caspius*. The brackish-water insect hitherto known to me as *bicolor* seems to me to agree better with *caspius* than *distinctus*.

15. **GYRINUS CASPIUS**, Ménét.; Aubé, Hydroc. et Gyr., 679; Suffr.; Kies., l. c., 140.

Dr. Sharp, loc. cit., records two female specimens in Mr. G. R. Crotch's collection, which he attributes to this species, stating that it very closely resembles his *distinctus*, but is not so shining, having the interstices obsoletely but thickly punctured. Aubé says of his insect, "*nitidissimus*"—"*interstitiis planis, lævibus,*" and Kiesenwetter makes no mention whatever of interstitial punctuation. It would thus seem scarcely probable that Mr. Crotch's insects can be identical with *caspius*, and the specimens Dr. Sharp mentions as received from the Continent under the name of *distinctus* would also appear irreconcilable with either that species or *caspius*, on account of the punctuation of their interstices. But the description of Mr. Crotch's specimens appears to agree well enough with that of Erichson's *colymbus*.

The "*elytris· apice fere recte truncatis*" of Thomson's *bicolor* seem very suggestive of *caspius*.

16. GYRINUS COLYMBUS, Er., Col. March., i, 191; Kies., l. c., 141; Ent. Ann., 1867.

Dr. Sharp, loc. cit., records six specimens in Mr. Crotch's collection which he refers to this species, though apparently with some little doubt, as they appear to be broader than true *colymbus*. He describes them as "ovate," with "the interstices thickly and evidently punctured, almost transversely strigose." Erichson states his *colymbus* to be oblong-oval, with the interstices extremely finely punctured; so that it seems impossible to reconcile Mr. Crotch's specimens with that species, with which, however, as above mentioned, the *caspius* of Dr. Sharp, "oblong-ovate," "with the interstices obsoletely punctured," is not unlikely to be identical.

17. GYRINUS OPACUS, Sahlb., Ins. Fenn., iv, 45; Ent. Ann., 1867.

Dr. Sharp, loc. cit., quotes this species as local, but common in Scotland, and also found at Horning in company with *G. marinus*. He states it to be very closely allied to *G. marinus*, but, on the average, considerably smaller, with the striæ finer, especially the inner ones. It appears to have a dull, opaque var., and to have been recorded as British by Suffrian twenty-five years ago.

From Dr. Sharp's remarks it would seem that the boundary line between the two species is very problematical.

In Mr. Crotch's Cat. "*dorsalis*" is given as a var. of *G. marinus*. Aubé quotes it as distinct (it appears to be opaque, with a ferruginous spot on the centre of the elytra, divided by the suture), and gives *opacus* as an entirely dark var. of it, and Thomson unites both as vars. b and c of *marinus*.

18. GYRINUS ÆNEUS, Stephens, Mand., ii, 95; id., Man., 78; Aubé, loc. cit., 690.

This insect, described by our countryman and adopted by Aubé (who quotes it from England), is by the latter stated to be very like *marinus*, but more convex, of a more brilliant and blueish black, with the punctuation of the elytra generally smaller and increasing in size as they get further from the suture, and the apex of the elytra more squarely cut, the external angles being not at all rounded. It appears also to be rather smaller than *G. marinus*.

Thomson, Skand. Col. ii, 116, adopts Aubé's *æneus*, but says it is much less than *marinus*, narrower, entirely brassy above and with its forehead scarcely bifoveolated. The apex of the elytra he describes as obtuse, and the striæ as equal, all distinct, with their interstices very delicately sub-strigose. The reflexed margins, moreover, are nigro-æneous in the latter's species and æneous in Thomson's. It seems, therefore, impossible that his insect can be identical with that of

Aubé; and I see that De Marseul separates them, giving Thomson's *æneus* as a synonym of *opacus*, Sahl., with which, according to the striation of Dr. Sharp's insect of that name, it would seem not to agree entirely, though undoubtedly closely allied. Aubé's *æneus* is given by De Marseul as a synonym of *Dejeani*, Brullé, and *nitens*, Suffr. (1842). But, admitting this to be correct, it cannot affect Stephens' *æneus*, recognised and adopted by Aubé, and described in the second volume of the Illustr. Mandib., 1829, as Brullé's insect was published in the account of the scientific expedition to the Morea, 1832.

19. ALEOCHARA LYGÆA, Kraatz, Berlin. Ent. Zeit., 1862, 317; D. Sharp, Ent. Mo. Mag., vol. v, p. 101.

Dr. Sharp has recorded this species, taken very rarely by himself at Thornhill, Dumfries, and which he has identified by comparison with a specimen of *A. lygæa* sent by Dr. Kraatz himself to Mr. Crotch, who appears to have already had two British examples of it in his collection. Dr. Sharp also has pointed out to me an example of his insect amongst some common *Aleocharæ* taken by myself at Rannoch.

Dr. Sharp's insect seems to have all the appearance of *A. mœsta*, but to be closely allied to *lanuginosa*, with the abdominal segments, however, densely punctured throughout. Kraatz describes his *lygæa* as of the build and size of medium specimens of *bisignata*, and in colour, punctuation and pubescence like *lanuginosa*, but considerably smaller, more slender, with yellower legs, and more evenly and widely punctured abdomen. From specimens of *mœsta* of the same size he separates it by its more slender antennæ and much more thickly punctured and shorter elytra.

20. ALEOCHARA CUNICULORUM, Kraatz, Ann. de la Soc. Ent. de France, 1858, clxxxix; Berl. Ent. Zeit., 1862, 318.

maculata, Brisout, Gren., Cat. et Mat., &c, 18, 1863.

The insect taken by myself at Shirley sand-pits (and also, I believe, by Drs. Sharp and Power at Aberlady) represents the *A. bisignata* of Waterhouse's Catalogue, and must, I think, be referred to the above species. In Erichson's *bisignata*, the intermediate joints of the antennæ are described as "*transversis, longitudine plus duplo crassioribus;*" whereas in my insect they are, as in *cuniculorum*, almost longer than broad. The thorax, also, would seem to be more transverse in the true *bisignata*, which apparently is so like *nitida* that Kraatz scarcely thinks it worth while to describe it fully. The species which I think to be *cuniculorum*, however, could not for a moment be confounded with *nitida*, being longer, thinner, with much more slender antennæ and legs. The legs, indeed, are so markedly narrow and long that I wonder no stress is laid upon them in Dr. Kraatz's description of *cuniculorum*.

It has, I believe, been for a long time suspected that our *bisignata* was not the true species of that name.

21. OXYPODA FLAVICORNIS, Kraatz, Ins. Deutschl., ii, 185; D. Sharp, Ent. M. Mag., vol. v, p. 101.

Dr. Sharp records the capture by himself of two specimens of this insect among decaying fir branches, on the Pinkard Hills, late in the autumn of 1864.

It is of the size and build of *O. hæmorrhoa*, but distinguishable from that species through its thicker pubescence, duller appearance, stouter, yellow antennæ, and pitchy-brown sericeous abdomen.

22. GYROPHÆNA STRICTULA, Er.; Ktz., Ins. Deutschl., ii, 360; E. C. Rye, Ent. M. Mag., vol. iv, p. 259.

I have observed, among some insects sent to me for names by Mr. T. Wilkinson of Scarborough, a *Gyrophæna* which appears to differ from the *G. strictula* of my collection in being darker, without the obsolete double series of thoracic punctures, and with the six penultimate joints of the antennæ getting gradually stouter. This insect I think must be the true *G. strictula;* whereas my old specimens of that name appear to be *G. polita*, Grav., Ktz. loc. cit.

23. MYLLÆNA MINIMA, Ktz., Ins. Deutschl., ii, 371; E. C. Rye, l. c., 189.

An insect in my collection labelled *M. infuscata,* and given to me (I believe) by Dr. J. A. Power, must I think be referred to *M. minima.* The Rev. A. Matthews has kindly given me a type of the true *infuscata,* compared with which the species above alluded to is narrower, more uniformly coloured, with more slender antennæ (which, with the legs, are yellowish) and shorter elytra.

24. QUEDIUS FULGIDUS, Auct.

Mr. Crotch, l. c., notes Thomson's division of this insect into five species, as under, and gives short characters for them, stating that all the forms occur (I presume, "in this country" is to be understood), but that a careful examination of very large material will be requisite before regarding them as specifically distinct.

Thomson's species (described in Skand. Col., ix, p. 159 et seq.) are as follows:—

1. *Quedius* (*Microsaurus*) 4-*punctatus*. This he distinguishes from the others by the two oblique punctures on each side of the disc of the thorax, by its elytra not being longer than the thorax, and by the 6th ventral segment of its abdomen having four setigerous punctures on each side before the apex. It is always black, with red elytra; and has the basal joint of its posterior tarsi almost as long as the apical joint; and, according to Thomson, is not rare in cellars and stables. As far as my limited experience goes, it occurs about trees, and never in such situations as those last mentioned; and I certainly consider it a good species.

2. *Q.* (*M.*) *temporalis*. This is the most common form, universally abundant in rubbish heaps, gardens, &c. Thomson adds "woods" (*skogar*) to his localities for it. It is very variable in colour, being often more or less pitchy, pitchy red, or even rufo-testaceous in the head, thorax and abdomen, but never seems to exhibit the deep black body and bright red elytra of 4-*punctatus*, from which it is separable by its thorax being shorter and more narrowed towards the apex, and with its disc unpunctured on each side; the basal joint of its posterior tarsi being evidently shorter than the apical joint; its elytra being longer than its thorax; the 6th ventral segment having only three setæ on each side, and the temples (behind the eyes) not so pubescent.

3. *Q.* (*M.*) *fageti*. This is entirely deep black, with pitchy-red tarsi, and is distinguished from *temporalis* by its shorter antennæ and elytra, the punctuation of which is more sparing but deeper, and by its abdomen not being versi-

colorous. In size, build and punctuation of the elytra it appears to resemble *Q. xanthopus*, but differs from that rare species in its shorter antennæ, of which the sub-apical joints are transverse, and narrower head. It is recorded as having occurred under bark of an old beech stump.

4. *Q.* (*M.*) *brevicornis.* This species, originally described in Skand. Col., i, p. 175, has red elytra sparingly and not strongly punctured, the sub-apical joints of its antennæ strongly transverse, the sides of its thorax without punctures, a sub-globose head, with very prominent temples, which are not punctulated (the frontal setæ, as in *Q. lævigatus*, being approximated to the neck, almost in the same transverse line as the seta of the temporal angle, and the anterior setigerous puncture being situated under the eyes exactly in the genal line), and the posterior tarsi thick and shortish.

It appears to occur under bark.

The insect recorded in Mr. Crotch's "Catalogue" under this name is apparently to be referred to the following species.

5. *Q.* (*M.*) *puncticollis.* This insect is shining deep black, with bright red elytra, black antennæ and legs, and pitchy-red tarsi. No sizes are given by Thomson for any of these new species, but I believe this one to be the smallest of them. It is allied to *brevicornis*, from which it is stated to differ in having the frontal setigerous puncture situated far in front of the seta of the temporal angle, and both the genal punctures placed above the elevated line, instead of directly in it. The punctures of the head, in fact, appear to be placed exactly as in the larger *Q. 4-punctatus.* In the build of its head and the strongly transverse joints of its antennæ it is stated to resemble *Q. cruentus*, and to differ from that species in having its head and thorax vaguely and very obsoletely punctured at the base, its elytra sparingly

and strongly punctured, its abdomen non-versicolorous and legs black.

Specimens of this insect are in the collections of Mr. Waterhouse, Drs. Power and Sharp and myself.

Thomson appears to have described the species from a single female example, found by himself under bark of a fallen birch.

It is rather curious that Thomson should not in any way refer to Gravenhorst's "Uebergangsverwandtschaften unter den Arten der Gattung Quedius," published in the Stettin. Ent. Zeit., 1847, p. 211, referred to by Kraatz, which contains so copious a notice of the different forms of *Q. fulgidus*; and also that he has not retained the name *fulgidus* for one of his species, especially as the Fabrician type is recorded by Erichson as having red elytra.

Herr Fuss, Berl. Ent. Zeit., 1862, 428, records the capture of a specimen of *Q. fulgidus* whereof one elytron was red, and the other dark. One wonders to which of Thomson's species this example could be referred.

25. PHILONTHUS CARBONARIUS, Gyll.; Thoms., Skand. Col. i, 157; G. R. Crotch, l. c., p. 67.

Mr. Crotch states that this insect is said by Thomson to be identical with our specimens of *tenuicornis*, Muls., some of which he has forwarded to Thomson. This *tenuicornis* I presume represents the insect formerly known here as *punctiventris*, not uncommon under cut grass and vegetable matter, and in which I certainly fail to detect the fusco-piceous legs, apex, and margins of ventral segments referred to as characteristic of the true *carbonarius* by Thomson. Thomson, in his vol. ix, p. 147, gives as a fresh character for distinguishing *carbonarius* from his *succicola* (*carbonarius*, Wat. Cat.), the absence in the former of setæ towards the lateral margin of the fourth ventral segment of the abdomen. But there is still a very great confusion among the species of this section of *Philonthus*, in spite of the recent paper upon them by Dr. Kraatz in the Berlin Ent. Zeit. (1868, p. 351), in which he recognizes *temporalis*, Muls., *tenuicornis*, Muls., *addendus*, Sharp, and his own *punctiventris*, and incidentally mentions *succicola*, *carbonarius* and *æneus*. *P. temporalis*, from the persistent way in which he likens it to *lucens* (our readers will remember the former confusion in this country about that species), and from its wanting the little keels in the middle of the transverse furrows at the base of the upper side of the first abdominal segments, would seem to point very closely to the insect formerly known here as *punctiventris*, afterwards said to be *tenuicornis*, and now declared by Thomson to be *carbonarius*. *P. tenuicornis* is quoted from Fuss and Scriba, and, as regards England, from Mr. Crotch, by Dr. Kraatz,—who, however, does not seem to speak of the species of his own personal knowledge. In like manner he only quotes Mr. Crotch for Dr. Sharp's *addendus*. His own *punctiventris* he states to have the impressed line at the base of the first abdominal segments almost entirely straight, and quotes two specimens from the Piedmontese and Rhætic Alps.

As regards *P. addendus*, Dr. Sharp informs me that he has forwarded specimens of it to Thomson, who returns them as his *succicola*,—with the description of which insect it appears to me simply impossible to reconcile them, if regard be had even only to the male character of the emargination of the ventral abdominal segments given by Thomson himself; for he states the 6th segment in his *succicola* to be emarginate as well as the 7th (as in *æneus*), which exactly fits our notion of his species, but does not agree with *ad-*

dendus, in which the 7th segment only is emarginate. Unfortunately, Thomson does not seem to be aware of the character afforded by the abdominal keels above alluded to; in his original description of *succicola*, also, there is apparently a mistake; for, in comparing it with *carbonarius*, he says that its head is less than in that insect: whereas, according to his own diagnosis and description the head in *succicola* is *scarcely* narrower than the thorax, and in *carbonarius* it is stated to be narrower than the thorax, without any qualification.

I may remark that I have taken a specimen of *P. addendus* in Coombe Wood. It has apparently been observed only in the north of England (Bold) and Scotland (Sharp).

26. PHILONTHUS NIGRIVENTRIS, Thoms., Skand. Col. ix, 147; D. Sharp, Ent. M. Mag., vol. v, p. 101.

Dr. Sharp records this recently described species as found sparingly at Thornhill, Dumfries, in a dead partridge, and also in a heap of cut grass. I have for some time had two specimens of it in my collection, turned aside under *cephalotes* and forgotten. They were taken at my first visit to Rannoch.

The insect is of the build and size of *sordidus*, from which it is instantly distinguishable by the very close punctuation of its elytra. It is also closely allied to *cephalotes*, but is less than that species, with the elytra more closely and deeply punctured, the abdomen black beneath, the legs darker, &c.

27. XANTHOLINUS PICIPES, Thoms., Skand. Col., ii, p. 190; id., ix, p. 177; G. R. Crotch, l. c., p. 68.

Mr. Crotch states that he has specimens from several parts of England, that it seems to him quite distinct, and that it appears to occur in ants' nests with *X. atratus*. Thomson describes it as distinguishable from *X. punctulatus* by its ferruginous antennæ, of which the scape is pitchy black, its fusco-testaceous legs, its head being smooth in the middle and less strongly punctured at the sides, and the testaceous apical margin of its 6th and 7th abdominal segments. He states it to occur abundantly in ants' nests, but does not mention any association of it with *atratus*.

The true *atratus*, according to Thomson, is of the same colour altogether as *picipes*, but almost two sizes larger, and with its head more strongly and deeply punctured. He separates it from *punctulatus* by its rather larger size, the lighter colour of its antennæ and legs, and the more rotundate anterior angles of its thorax.

28. STENUS MAJOR, Mulsant, Opusc., 61, 163; D. Sharp, Proc. Ent. Soc., 3 Dec., 1866, Ent. Mo. Mag., vol. iii, 192.

This fine insect, brought forward at a time when it was impossible to include it in the 1867 "Annual," by some mistake on my part was omitted from that for 1868. A few specimens of it were taken by Dr. Sharp (to whom I am indebted for a type) near Southend, on the banks of a pond near the Shoeburyness road. It has been detected in Dr. Power's collection, from Wimbledon Common, I believe.

It is closely allied to *S. pubescens*, Steph. (*sub-impressus*, Er.), and is about the same size as that species, but looks larger, being more robustly built. Compared with *pubescens*, it may readily be known by its wider head, shorter and broader thorax and wider elytra, and especially by its abdomen not being parallel for its greater length and only contracted just before the apex, as in that species, but commencing to be contracted almost at its base, and having its apex comparatively acuminate. The antennæ, also, are darker at the base, and the whole insect is rather more shining.

29. HOMALIUM PUSILLUM, Auct.

Mr. Crotch, l. c., p. 68, notes that the insect hitherto known to us by this name is split by Thomson into two species, both of which, as he says, occur in this country.

They form Thomson's genus *Phlœonomus*, and are (Sk. Col., ix, pp. 317—8) thus named and characterized.

1. *P. punctipennis*; distinguished by its slightly shining appearance and yellow antennæ (of which the apical joints are distinctly more incrassate), the rotundate anterior angles of its thorax, which is impressed with larger and deeper dorsal foveæ, and the evident though delicate punctuation of its elytra.

Mr. Crotch states that it occurs under bark of birch. Thomson gives the bark of "*löfträd*" (literally, "leaf-tree," and by which he means any but trees having needle-leaves, like firs, &c.) as its habitat. "*Björk*" is the Swedish for birch; but, in a locality where the only "leaf-trees" growing amongst the pine forests are birch trees, the expression "*löfträd*" would be synonymous with birch.

2. *P. abietinus*; very like the preceding, but darker in colour, opaque, with the antennæ brownish at the apex, less strongly incrassate, and with the third joint longer; the thoracic dorsal foveæ less deep, the elytra very delicately alutaceous, and scarcely visibly punctate.

It appears to be found under bark of various pines, especially the spruce.

30. **Megarthrus affinis**, Miller, Verhandl. der Zool. Bot. Gesellsch. in Wien, ii, p. 28.
Bellevoyei, de Saulcy.
sinuatocollis, Ktz., nec Boisd. et Lac.

Dr. Kraatz (Berl. Ent. Zeit., xii, 1868, 349) gives the above as the correct synonymy of De Saulcy's species, for a description of which see p. 208 of vol. iv, Ent. Mo. Mag. He states that the *sinuatocollis* of his Ins. Deutschl. is not the true species of that name, but is identical with *M. Bellevoyei*, over which Miller's *affinis*, which is also identical with it, has priority. It may be remembered that in Berl. Ent. Zeit., 1862, Dr. Kraatz stated *M. Bellevoyei* to be identical with *sinuatocollis*, an evidently erroneous opinion which is now intelligibly accounted for, and which also accounts for my inability (loc. cit.) to satisfactorily follow Kraatz in his characters for the latter species. But, admitting Dr. Kraatz to be now correct in his appreciation of *Bellevoyei*, I cannot quite see how his old *sinuatocollis* can be identical with that species, as he gives male characters that accord with *sinuatocollis* and do not apply to *Bellevoyei*, with which insect other parts of his description are at variance.

31. **Catops flavicornis**, Thomson, Skand. Col., ix, p. 346; G. R. Crotch, l. c., p. 69.

Mr. Crotch, remarking that he cannot clearly make this out, says that most of his *C. nigricans* appear to agree with Thomson's recently described species.

Thomson (who gives no definite size) states it to be intermediate between *picipes* and *nigricans*, from the former of which he distinguishes it by the more pronounced club of its antennæ, the sinuation of the base of its thorax near the somewhat prominent hinder angles, the second, third and fourth joints of its posterior tarsi being perceptibly shorter, and the first joint of the intermediate tarsi in the male wider; and from the latter by its longer ferruginous antennæ (of which the seventh joint is oblong), its somewhat shining and more convex elytra, which are widened before the middle and have deeper striæ, conspicuous up to the base, its less strongly spinulose posterior tibiæ, and the genæ almost equal in width to the diameter of the eyes.

I imagine the word "*picipes*" may possibly be a mistake for "*fuscus*" in Thomson's comparison. In his "Conspectus Specierum," p. 344, he places *flavicornis* between *nigricans* and *fuscus* in a group composed solely of those three species, and as far removed as possible from *picipes*,—the sectional characters for which ought to have been amply sufficient to distinguish it, without recapitulation or addition.

32. SCYDMÆNUS FIMETARIUS, Thomson, Skand. Col., iv, p. 89 (*Euconnus*); G. R. Crotch, l. c., p. 69.

Mr. Crotch states that he has found this insect in several localities.

Thomson describes it as very like *S. hirticollis*, but with the penultimate joint of the palpi and antennæ fuscous, and the hairs on the elytra shorter and less scattered. He also lays stress on its habitat, which he says is under rotten vegetable matter in hot-beds, whereas *hirticollis* is described as occurring in woods in marshy places under fallen leaves. I must admit that there seems little actual difference here in the pabulum.

33. **Meligethes subrugosus**, Sturm; Gyll.; Er., Ins. Deutschl., iii, 178, 10; Thoms., Sk. Col. iv, 155; D. Sharp, Ent. M. Mag., vol. v, p. 100.

Dr. Sharp records the capture by himself of a specimen of this remarkable insect on the banks of the water of Ken, Galloway.

It is in Erichson's second section of the genus, containing *æneus* and *viridescens*, and is about the same size as *serripes*, ovate, convex, deep black, shining, with pitchy legs, and its elytra delicately transversely rugose. The front tibiæ are lighter than the rest, very little widened, and with their outer margin very delicately serrato-crenulate.

34. **Atomaria sp——**, E. A. Waterhouse, Ent. Mo. Mag., vol. iv, 186.

Mr. Waterhouse records the capture by himself at Studley-Royal, near Ripon, of three examples of an *Atomaria* which bears a superficial resemblance to *A. ferruginea*, but has a 3-jointed club to its antennæ. It is rather larger and more shining (being less thickly punctured) than that species and of a darker colour, inclining to chestnut.

I have seen one of these specimens, which was quite new to me. I think, however, the insect may possibly be *A. diluta*, already recorded as British, though it does not exactly accord with the description of that species.

35. **Attagenus megatoma**, Fab.; Er., Ins. Deutschl., iii, 441; T. V. Wollaston, Ent. M. Mag., vol. v, p. 101.

Mr. Wollaston records the capture by himself, in Finsbury Circus, in July last, of a male specimen of the above cosmopolitan insect, the chief wonder about which appears to be that it has *not* been found in England before, since it occurs all over Europe, and in Syria, North America, the West Indies, Madeira, &c., and has domestic habits, like *A. pellio,* from which its smaller size, narrower shape, and entirely unspotted surface, and the very long apical joint of its antennæ in the male, at once distinguish it.

36. SPHÆRIDIUM MARGINATUM, Fab.; Gyll.; Er.; Thoms., Skand. Col., ix, p. 123; G. R. Crotch, l. c., 67.

Mr. Crotch records the present determination by Thomson of this insect as distinct from *S. bipustulatum,* Fab., rightly as he thinks; and adds that both *forms* occur here.

The insect (of which a variety occurs with the thorax not margined with testaceous) was formerly considered by Thomson as a var. of *S. bipustulatum,* from which it differs in the absence of a well-defined yellow apical spot to its elytra, and of the rudimentary dorsal striæ of punctures which appear on the disc of that species.

37. CERCYON LUGUBRE, Payk.; Gyll.; Thomson, Skand. Col., ix, p. 125; G. R. Crotch, l. c., p. 67.

Mr. Crotch notes the division of this species into two, and states that both occur in England, the true *lugubre* being much the commoner.

Thomson remarks that both Paykull and Gyllenhal have apparently included the insect subsequently described as *C. granarium* in their *lugubre;* but that as Erichson first clearly described both, we ought to follow his nomenclature.

C. lugubre, Gyll., he characterizes as allied to *C. minutum,* Fab., through its sub-opaque elytra, but to be distinguishable from that insect by its body being more narrowed behind, the striæ of its elytra running quite to the apex, which has a rather well-defined red patch, its narrower mesosternum, and the less elevated keel of its prosternum.

C. granarium (Er., Col. March., i, 221),—the *lugubre* of Thomson's former vol.,—he distinguishes from *lugubre*, Gyll., by its wider and oval mesosternum, the shining interstices of its elytra, the striæ of which are (especially towards the sides) more remotely punctured and the apex unicolorous, and by the wider second joint of its maxillary palpi. From *minutum* he distinguishes it by its shining and more strongly punctate-striate elytra, which are more narrowed at the apex, and its punctulated mesosternum.

38. APHODIUS SCROFA, Fab.; Er., Ins. Deutschl., iii, 857; D. Sharp, Ent. M. Mag., vol. v, p. 100.

Dr. Sharp records a specimen of this insect taken two or three years ago at Southport by Mr. Sidebotham. Stephens' *scrofa* is represented by *porcatus* in his collection.

It is in the same section as *porcus*, but of the size of *porcatus*, oblong-oval, rather flat, dull black, set with coarse, short yellowish-grey pubescence (Mulsant's genus *Trichonotus* being founded on the species), and with its elytra crenate-striate, and pitchy at the sides and apex.

39. APHODIUS SABULICOLA, (? Thomson, Skand. Col. x), G. R. Crotch, l. c., p. 69.

Mr. Crotch mentions this insect as "near *punctato-sulcatus*, but shorter, smaller, more dilated posteriorly, and the thorax not margined with yellow at the base." He has "seen two examples (I presume, "of British origin" is to be understood) apparently referable to this species."

The insect is doubtless brought forward in the 1st part of Thomson's vol. x, to which Mr. Crotch alludes in his introductory remarks, but which has not yet been published, as far as I am aware.

40. TRACHYS TROGLODYTES, Schön.; Kies., Ins. Deutschl., iv, 169, 3; D. Sharp, Ent. M. Mag., vol. v, p. 100.

Dr. Sharp records his capture of this continentally rare species in a marshy place about three miles from Thornhill, Dumfries, during last March. This appears to be only the second recorded species of the *Buprestidæ* in Scotland.

It is dark brassy in colour, with blue elytra, and is closely allied to *T. pygmæus*, from which it may be known by its darker colour, more elliptical form (being more elongate, with its greatest breadth not towards the front), and the deeply excavated furrow on the front of its head, which is continued as a impressed line to the margin of the thorax.

My solitary exponent of *T. pygmæus*, taken at Holme Bush by myself, must be referred to this species.

T. pygmæus seems (though undoubtedly occurring in the north) to be more of southern distribution.

41. CRYPTOHYPNUS PULCHELLUS, Linn.; Kies.; Candèze; Thomson, Sk. Col., vi, 113 (*Negastrius*); R. Hislop, Ent. Mo. Mag., vol. v, p. 139.

Mr. Hislop records the capture by himself, on the banks of the Findhorn, Morayshire, of two examples of this species, determined by Dr. Sharp.

It appears to be spread over the whole of Europe, on river-banks, living under stones and in the roots of plants, especially of *Triticum repens*, on which, according to Lacordaire, its larva feeds. And it is even recorded from America.

This most variable species is about the size of 4-*pustulatus* (perhaps a little larger); its elytra are strongly striated (the striæ, however, being sub-obsolete at the apex), with the interstices almost keel-like as far as the middle; and, in the type-form, are ornamented with a whitish-yellow trilobed spot at the base (composed of two humeral spots and a scutellar line), another rounded spot below the middle and some smaller spots, or a larger bifid mark at the apex. A common var. seems to have the spots running into the shape of X on the back; but Candèze states it would be impossible to enumerate all the combinations of markings afforded by this insect.

Its thorax has the posterior angles slightly divergent, with the raised keel that commences at the angle running parallel to the lateral margin as far as the middle, and the disc sub-rugosely punctured. The legs are entirely yellow.

42. **CRYPTOHYPNUS SABULICOLA** (Frontisp., fig. 7), Bohem.; Thomson, l. c., 113; D. Sharp, Ent. M. Mag., vol. v, p. 100.

Dr. Sharp records the capture by himself of twelve examples of this rare species on the banks of the Nith, Thornhill, and of two specimens by Mr. Lennon on the banks of the river at Dumfries. Hitherto it appears only to have occurred in Sweden. It is very closely allied to *C. pulchellus*, but appears to be separable from that species by its much larger size; by its longer thorax, of which the posterior angles are shorter and not in the least degree diverging,—the raised keel does not extend further than a third of the lateral margin,—and the disc is much more strongly rugose-punctate; and by the fuscous middle of its femora. Its elytra are distinctly striated to the apex, and the sub-carination of the interstices reaches beyond the middle.

In point of marking and colouring it seems considerably to resemble *C. pulchellus*, and to be as variable as that insect.

A glance at the fig. on our frontispiece will probably convince others, as the specimen from which it was taken has convinced me, that this is the most handsome and interesting addition to our Coleopterous fauna that has been made for many years.

43. PHOSPHÆNUS HEMIPTERUS (Frontisp., fig. 8), Geoffr.; Kies., Ins. Deutschl., iv, 457; E. C. Rye, Ent. M. Mag., vol. v, p. 44; Catherine C. Hopley, ib., p. 70.

Miss Hopley's account of her capture in June last at Lewes of four male specimens of this strange insect will doubtless have both surprised and interested English Coleopterists. There appears no reason to think they were accidentally imported, and the species is common enough in France and Germany. It is, however, curious that they should have appeared during such an excessively hot summer as that of the present year. The insect is of so peculiar a build that there is no need for me to do more than refer to the figure of it on the frontispiece to the present "Annual." The female has no rudiments of wing-cases or wings, and is larger than the male. The antennæ and legs of this species are very suggestive of *Lycus*, the habits of which, according to Kiesenwetter, it imitates by folding its limbs and simulating death.

From Miss Hopley's account the insect would seem to be decidedly luminous, even in the male.

44. **Malthodes guttifer**, Kies., Linn. Ent. vii; Ins. Deutschl., iii, 543; D. Sharp, Ent. M. Mag., vol. v, p. 19.

Dr. Sharp records this species as rare, and taken by himself at Galloway, Strathcannich, and Gareloch-head. I have a single specimen from Rannoch.

It is black, delicately pubescent, with pitchy or brownish-testaceous legs, the breast and abdomen partly testaceous, and the elytra yellow at the apex; the thorax is transverse and margined all round.

The real characters, however, are in the apical segments of the abdomen in the male, which would require more room to describe than can be here afforded; and of which, indeed, the descriptions would be useless, unless they were accompanied by those of the same parts in all our other species.

45. **Malthodes misellus**, Kies., l. c., 551; D. Sharp, loc. cit.

Dr. Sharp records the capture by himself in May, 1867, of half-a-dozen male specimens of this insect at Dumfries, and the existence in the collections of Mr. Crotch and myself of specimens which he thinks must be attributed to a species unknown to him, if they be not females of *M. misellus*. My example was taken at Rannoch.

It is black, with the mandibles and knees sub-testaceous, and the abdomen partly yellow; the thorax is sub-quadrate, with the anterior margin rotundate, and the anterior angles slightly prominent.

46. **Apion cerdo**, Gerst., Stett. Ent. Zeit., 1854, 235; Wencker, Mon. des Ap., 11; D. Sharp, Ent. M. Mag., vol. v, p. 124; T. J. Bold, ib., p. 142.

Dr. Sharp has made out this species from specimens of both sexes found by himself at Dumfries on *Vicia cracca* in July last, and records its prior capture by Mr. Lennon in flood refuse at the same place early last spring, and the existence of an example in Mr. Crotch's collection, taken by Mr. Wollaston at Killarney. Subsequently, Mr. Bold records it from *Vicia cracca*, in the neighbourhood of Newcastle-on-Tyne, and about Lanercost, in East Cumberland.

It is a large insect, of the group in which the rostrum is subulate, allied to *craccæ* and *subulatum*, from the former of which it may be known by its larger size, more bulky limbs, and darker antennæ, of which the two basal joints only in both sexes (sometimes only the first joint, and that not entirely) are obscurely ferruginous. In both sexes, also, the rostrum is longer in front of the insertion of the antennæ, and more gradually acuminate.

From *subulatum* it differs especially in its larger size and the shorter and stouter basal joint of its antennæ, and by the rostrum in the female being shorter, thicker, and less pointed; and in the male more inflated at the base and more evidently acuminated at the apex.

I am at a loss to account for Wencker's statement that the head is wider in *subulatum* than in *cerdo*.

47. **Cathormiocerus socius** (Frontisp., fig. 6), Schön., Syn. Ins., vii (Supp.), 121; Seidlitz, Otiorh. sen. str., Berl. Ent. Zeit., xii, Beih., 133; E. C. Rye, Ent. M. Mag., vol. v, p. 68.

I have (loc. cit.) substantiated the claims of this species to be included in our Lists, on the authority of a specimen taken by my friend Mr. H. Montague, in the early part of the summer of 1867, at Freshwater, Isle of Wight, and now in my collection.

This capture is most interesting to us, not only on account of the species having been originally described from a British example sent to Schönherr by the late Mr. Walton, but because the genus appears to be considered exclusively South-European,—Seidlitz's only locality for our insect being the Sierra Nevada, in Spain (*Stenus Kiesenwetteri* will doubtless here suggest itself). I remember being gravely told that *C. socius* was truly a Cape of Good Hope insect!

Walton must through some error have repudiated the specimen quoted by Schönherr, for there was a second (badly abraded) example of the insect in his own collection, wrongly labelled. This is now in Mr. G. R. Waterhouse's collection. I observe (in addition to his note upon this species in the Stettin. Ent. Zeit. quoted by Seidlitz) that he refers to this species in his "Notes," p. 87, under the head of *Omias sulcifrons*, where no one would certainly ever think of looking for it. He there states that the specimen he gave to Schönherr was the only one he had seen, and that he thought it came into his possession with the collection of the late Mr. Millard of Bristol, but was equally ignorant of its history and locality.

Of our *Rhynchophora*, the only species at all resembling *C. socius* is *Trachyphlœus squamulatus*; from which its larger size, longer and less suddenly rounded elytra and smaller thorax, of which the sides are evenly rounded, will readily distinguish it, apart from generic characters.

The antennal grooves are pit-like, irregular, conspicuous from above; and, in the male, the scape of the antennæ is suddenly and angularly dilated close to the base, and curved. In fresh specimens the thorax has the sides and a middle line yellowish, and the elytra densely clothed with scales, presenting a dull and somewhat tessellated appearance, the interstices being set with light bristles.

48. BARYPEITHES PELLUCIDUS (Frontisp., fig. 5, male), Schön., ii, 507 (*Omias*); Seidlitz, Berl. Ent. Zeit., 1868, Beih., 68; W. G. Pelerin, Ent. Mo. Mag., vol. v, p. 44.

Mr. Pelerin records the capture by himself in Hackney Marshes during May and June last of a few specimens of both sexes (including a pale form) of an *Omias* which I think is to be referred to the above species. The scattered long grey hairs on its elytra at once separate this insect from *brunnipes*, the only other British species which it at all resembles. In it is considerable sexual disparity, the male being much thinner and more elongate than the female, and having its femora considerably inflated and the anterior tibiæ much more curved inwardly. Seidlitz remarks that the thorax in this sex is very wide, and equal in breadth to the elytra, whilst in the female he describes it as narrower than the elytra; but the fact is that in the male the thorax is not widened, but the elytra are much narrowed; the result being the same.

The male characters above alluded to, the strongly rounded thorax, long hairs, more angulated and deeply impressed rostrum of this insect, distinguish it from *mollicomus*, Ahr., not yet recorded as British, but to which it is closely allied.

It appears to occur in the company of ants, and certainly also on *Lasius niger* and *flavus*.

According to the recent revision of the *Otiorhynchides sensu stricto* by Herr Seidlitz (loc. cit.), some considerable alterations will have to be made in the nomenclature and position of the members of our old genus *Omias*, which I will now shortly enumerate.

OMIAS, as now restricted, is apparently separated from *Barypeithes* chiefly by its antennal furrow being confined nearer to the apex of the rostrum, and not well defined and deflexed beneath the eyes. It contains but one species hitherto recorded as British, viz., that known to us as *O. Bohemani*, Schön., vii; but which was, according to Seidlitz, first described by Schönherr in his vol. ii, p. 504 (and must now be known) as *O. mollinus*, from a small light-coloured German specimen; *Bohemani*, subsequently described in the same work, being merely a large dark Norwegian example of the same species.

The next genus, BARYPEITHES, Jacq. du Val (originally founded upon a supposed new species, *rufipes*, but which seems to be identical with the well known *sulcifrons*), has the depression for reception of the antennæ lateral, with its lower margin deflexed, the part next the margin being deepest and sulciform; of our species it includes *B. pellucidus*, *brunnipes*, and *sulcifrons*.

The genus PLATYTARSUS, Sch., intermediate between *Barypeithes* and *Trachyphlœus*, and in which the antennal furrow is often bent under the eyes, but does not touch them, the rostrum is longer than in *Barypeithes* and narrower than in *Omias*, the elytra are always beset with hairs, setæ or scales, &c., contains our remaining species, *hirsutulus*, Fab., which must be now known as *echinatus*, Bonsdorf (an older name groundlessly deposed by Fabricius), and the insect formerly known as *Strophosomus hirtus*, Schön., for which Herr Seidlitz proposes to adopt the name *setulosus*, under which Schönherr again immediately described it. The late Mr. Walton's remark, in the face of Schönherr's authority for the genus of his *hirtus* (taken near Southampton, and at

Arundel amongst moss, in February), that its general habit and affinity presented a greater resemblance to insects of the genus *Omias* than to the British forms of *Strophosomus*, is now amply justified.

Seidlitz states that the species is easily to be recognized by the roundish white scales on the sides of the thorax (the others wanting scales). It is 1⅓ lin. long, sub-globose, ferruginous, with its elytra densely clothed with depressed fuscous scales and also with rows of erect setæ.

49. MAGDALINUS DUPLICATUS, Germar, Ins. Sp., i, 194; Gyll. (*frontalis*, fem.); Thoms., Skand. Col., vii, 331; R. Hislop, Ent. Mo. Mag., vol. v, p. 168.

Mr. Hislop records the capture, sparingly, by himself, on Scotch fir in Morayshire, of the above species. His insects have been compared by Dr. Power with specimens representing it in the British Museum Collection.

Its blue or blue-black colour and sculpture are stated to suggest *M. phlegmaticus*, from which its more cylindrical body, shorter head and curved rostrum serve to distinguish it; and its more elevated and evidently punctured forehead, curved rostrum, in which the antennæ are not inserted before the middle, shorter thorax and tarsi, &c., readily separate it from its close ally *M. violaceus*, Linn., not yet recorded as British.

50. DORYTOMUS SILBERMANNI, Wencker, Cat. des Col. de l'Alsace et des Vosges, 1866, p. 129; G. R. Crotch, l. c., p. 65 (*Silbormanni*).

Mr. Crotch remarks that this insect seems to be abundant with us in early spring, and that it differs from *D. maculatus* in its larger size, less closely punctured thorax, and more strongly toothed femora.

From De Marseul's notice of this species in "L'Abeille" (it appears, however, to have escaped record in his most recent Catalogue), it is spread widely over France, occurring on the catkins of several species of *Salix*, and differs from *maculatus* as above mentioned (except that the femora are merely stated to be more robust, the tooth being particularized as small and short,—the size to be usually a little larger,—and the whole insect to be less convex), and from *bituberculatus* (*costirostris*, Wat. Cat.) in its larger size, wider shape, thicker and shorter rostrum, and the uniform spots on its elytra.

When so acute an observer as the late Mr. Walton (Notes, p. 113) has stated that it is exceedingly difficult to find satisfactory distinguishing characters between specimens of equal magnitude of *D. costirostris* and *D. maculatus* (and there can be no doubt that he knew the true species of those names respectively), and that he separated them with some hesitation, it may be readily imagined that the existence of a *third* and closely allied species will not render correct diagnosis easier to the generality of Entomologists. I see no comparison of *D. Silbermanni* with *D. affinis*, the larger size, thicker and shorter rostrum, stouter legs and broader form of which, as compared with *costirostris* and *maculatus*, would seem at least to deserve notice.

A single specimen of *D. Silbermanni* is recorded, from Frankfort, in Berl. Ent. Zeit., 1867, p. 379.

51. BALANINUS CERASORUM, Walton, Wat. Cat.

Lately, when naming some beetles for my friend, Mr. T. Wilkinson of Scarborough, I was induced, through finding among them a *Balaninus* which I could not satisfactorily refer to any of our recorded species, to look to the description of *B. cerasorum,* and was compelled to come to the conclusion that all my exponents of that insect were *rubidus,* (Gyll.) Schön., iii, 384, 12, and that Mr. Wilkinson's specimen was the true *cerasorum,* Hbst. Curiously enough, Dr. Sharp informs me that Mr. G. R. Crotch and himself had also come to the same conclusion as to the ordinary *cerasorum* of our collections. Mr. Crotch has also, I believe, found what are apparently male and female of true *cerasorum,* mounted on one card, among the series of the supposed species of that name in the Brit. Mus. English Collection, the remainder being what I considered *rubidus,* and one of the cards at least having apparently the sexes mounted on it. In none of my old *cerasorum* is the rostrum much longer, and in one of them it is perceptibly shorter, than the head and thorax; whereas, in the true *cerasorum,* it is of much greater length, in the female exceeding the whole length of the body. Besides this character (mentioned at length by Herr Fuchs, who compares *rubidus* and *cerasorum* in Berl. Ent. Zeit., 1862, 426), the posterior femora in the latter insect are armed with a distinct, sharp, small tooth; and the entire beetle is of a different build to that which has the non-dentate femora, being larger as a rule, wider, flatter, more suddenly contracted behind, more variegated, and altogether more resembling a little *B. turbatus,* or one of its allies. So far, one would imagine that the two species were satisfactorily discriminated; but there is equally strong and perfectly reliable evidence that the two beetles are simply the sexes of one species! Mr. F. Smith, whose habits of accurate observation are well known, has several pairs, taken by himself *in cop.,* and carefully mounted; all the females of which are *cerasorum* and all the males *rubidus;* and Dr. Power has taken several *rubidus,* unaccompanied by the other form, off a particular birch-tree, upon which, some month or so subsequently, he has found nothing but *cerasorum;* his conclusion being that the males and females came out as a rule at different times. This would seem corroborated by Mr. Waterhouse's collection, in which are several "*rubidus*" and only two or three "*cerasorum,*" taken on different occasions. One of Dr. Power's *cerasorum* certainly has the rostrum shorter than the others, as in the Brit. Mus. pair: but it is possible that more latitude as to sexual rostral longitude must be allowed than we are in the habit of granting.

As a counter (but not conclusive) argument against these facts, it may be observed that in none of the other true *Balanini* is there any sexual disparity as to femoral toothing.

52. TOMICUS MARSHAMI, Rye, Entomologist's Monthly Magazine, vol. iv, p. 187 (described); T. Morley, ib. ?*fuscus,* Marsham (nec *bicolor,* Hbst.).

Mr. T. Morley records the capture by himself, in February, 1866, and subsequently, of several specimens of a small *Tomicus* under bark of decayed branches of beech-trees lying on the ground in a wood near Prestwich, Manchester, which I am inclined to think, for the reasons stated loc. cit., are very probably the *T.* (*Ips*) *fuscus* of Marsham, in spite of the declared identity of that insect with Gyllenhal's species of the same name, which has been identified with *bicolor,* Hbst. As, however, Gyllenhal's positive account of his receipt from Kirby of Marsham's *fuscus* and the identity of it with his own insect cannot (even if my supposition be correct) be controverted, owing to the shortness of the Marshamian description, and as I am unable to refer Mr. Morley's beetle to any described species, I have named it *Marshami.*

I subjoin a diagnosis of the species, which is tolerably fully described by me, loc. sup. cit.

Oblongus, fere cylindricus, nigro-piceus, elytris dilutioribus, antennis pedibusque ferrugineis, pilis tenuibus, pallidis, sparsis, postice magis conspicuis seriatimque dispositis, vestitus; thorace (præter lineam mediam basalem nitidam) opaco, granulis transversis, basim haud punctatum versus gradatim evanescentibus, instructo, pone medium haud transversim impresso; elytris nitidulis, parallelis, fortiter crebreque punctato-striatis, interstitiis etiam punctulis multo minus crebre seriatim impressis; apice muticis, sat abrupte rotundatis, vix visibiliter retusis.

Long. corp. ⅞ *lin.*—1¼ *lin.* (*Anglic.*).

The insect, which is about equal to *T. bidens* in its average size, is, compared with *bicolor*, less hairy, narrower, with the thorax behind not so shining, and granulated instead of punctured, wanting also the obsolete transverse depression behind the middle, and with the elytra not nearly so evidently flattened behind at the apex.

53. TOMICUS CORYLI, Perris, Ann. de la Soc. Ent. de Fr., 1855, 78; Ratzeburg, Die Waldverderbniss, Bd. 2, 1868, Col., Taf. i, 14, p. 382; E. C. Rye, "The Naturalist's Note Book," vol. ii, p. 160.

I have incidentally noticed the occurrence near Darenth Wood of a *Tomicus* like a very small narrow female of *bispinus*, which I believe is to be attributed to the above species. Dr. Sharp and I took a few specimens in the beginning of June, 1864, by beating the hedges near the "Fox."

54. **Tomicus flavus**, Wilkin, Wat. Cat.; E. C. Rye, l. c.

The solitary exponent of this species (?) in the Stephensian cabinet is only a large immature specimen of *T. dryographus*. Er.

55. **Phyllodecta cavifrons**, Thoms., Skand. Col., viii, 278; D. Sharp, Ent. M. Mag., vol. v, p. 100 (*Phratora*).

Dr. Sharp notes that this species is probably not uncommon. I find a single specimen of it among my short set of *vulgatissima*, accompanied by another which appears to oscillate between the two species.

Thomson's *cavifrons* is distinguished from *vulgatissima*, which it resembles in its blue colour and long antennæ, by the regularity of the striæ of its elytra, the rounding of the sides of its thorax in front of the middle, the wide excavation of its forehead between the antennæ, and (in the male) the scarcely dilated basal joint of its tarsi, which is much narrower than the third joint, and its uncurved posterior tibiæ. From *vitellinæ*, which it resembles in the even striation of its elytra, it may be known by its colour, more oblong shape, longer antennæ, frontal excavation, longer and less transverse thorax, and the above mentioned character of the scarcely dilated basal joint of the tarsi in its male.

Thomson restores Kirby's name for the genus.

56. **Adimonia suturalis**, Thomson, Skand. Col., viii, p. 151, 3 (*Galeruca*); G. R. Crotch, l. c., p. 65 (*Ademonia*).

Mr. Crotch notes Thomson's insect, a new species, separated from *A. capreæ*, as not uncommon with us on heather.

Thomson's characters for it, compared with that insect, are its shining forehead, which is more sparingly and strongly punctured, with the facial tubercles polished and sharply defined behind, its more shining and laterally more sparingly punctured thorax, the fuscous suture of its elytra, and the thicker and longer hairs on the 2nd and 3rd segments of the abdomen in the male. He states it to occur in *Salix repens*.

I have found insects agreeing with Thomson's description on Wimbledon Common; but, as Mr. Crotch remarks, they always occurred on heath. These I have hitherto referred to Stephens' *G. capreæ, var.? saturata*, with which they appear to be identical. Without laying any claim to merit on the part of Stephens in the present instance, I may observe that it seems curious that so many of his insects should be recorded as good and undescribed species, long after he had, as he fondly imagined, "marked them for his own." Perhaps (as in the well known advice to an incompetent judge), if he had given his opinion *without* his reasons, many of his species might have been allowed to stand, seeing that the Fabrician (and other equally obscure) enigmas are deemed sufficient for authentication.

57. GRAPTODERA MONTANA, Foudras, Alt., 1860, 295; Allard, 1861, 315, "L'Abeille," 51 (Mon.); G. R. Waterhouse, Ent. Mo. Mag., vol. v, p. 163.
cognata, Kutsch, p. 163.

An insect sent by Mr. Waterhouse to Herr Kutschera as apparently differing from the *G. oleracea* of his "Catalogue" has been returned as *G. montana*, Foudr. I have long had specimens so named in my collection (the insect being very common), but refrained from bringing the species forward, as I felt, and still feel, quite convinced that it is nothing but a form of the variable insect hitherto known to us as *oleracea*, and which we are now told, both by M. Allard and Herr Kutschera, is *pusilla*, Dufts. *G. pusilla*, Dufts., is considered by Herr Kutschera as identical with the subsequently described *G. helianthemi*, All., which, however, is placed by that author in a different section of the genus from *pusilla*. There seems very little doubt that this genus is not yet thoroughly well known; Herr Kutschera himself being dissatisfied with the determinations hitherto made concerning its members, and desiring to re-examine the group. This seems disheartening, after so many attempts have already been made, and perplexing changes of names insisted upon. To say nothing of older and general authors, we have recently had Foudras, Kutschera and Allard (the latter in two separate publications) especially devoting their energies to the *Halticidæ*, the result being a complication of contradictions and in many cases an accumulation instead of a dispersion of difficulties. To complete the "embrouillement," Thomson, in his recently published vol. viii. of Skand. Col. differs from all of them in many points.

With regard to *Graptodera* in general, I may remark that Herr Kutschera corroborates the *consobrina* of Wat. Cat., which M. Allard terms *lythri;* he agrees with M. Allard in corroborating *ampelophaga*, Wat. Cat. (which, however, *must* be *coryli*, from its constant habitat,—or else *coryli* and *ampelophaga* cannot be specifically distinct); he agrees with M. Allard in *ericeti;* he names what is apparently a small *ericeti* as *longicollis*, Allard, and considers the now well-known parallel-sided insect with strongly patellated front tarsi (which Mr. Crotch has informed us was named for him *longicollis* by M. Allard himself) as a variety of *pusilla* (*oleracea*, Wat. Cat.)!—in spite of Mr. Waterhouse having specially called attention to its structural peculiarities. It is needless to say that it has absolutely nothing to do with that species; it occurs only in the north, and, to make confusion more confounded, is, according to a specimen received from Dr. Sharp, with a note to that effect, the male of *ericeti*. Mr. T. Wilkinson of Scarborough, who has sent me the insect from time to time, of great variety in colour, from dull pitchy-greenish to shining blue-green, tells me he finds it on *Helianthemum*, whilst Dr. Sharp's specimens accompanied undoubted female *ericeti* on heather.

As to *G. oleracea*, Linn., which we are unanimously told does not occur here, I may observe that the two Linnæan exponents of it (according to Mr. Waterhouse's notes) pinned through the label, are 1st, the larger purple insect variously termed *consobrina* and *lythri*, and 2ndly, the insect now termed *pusilla*. Gyllenhal, who best may be presumed to know Linnæus' insect, describes it as frequenting all sorts of plants and shrubs, *especially* hazels, and often heather; as being liable to variation in size from being almost as large as *Phyllodecta vitellinæ* to four sizes less than that insect, and in colour as follows,—blueish-green, fuscous-brassy, fuscous-greenish, almost black, shining blue or violet-blue. It is, therefore, tolerably certain that his *oleracea*, and presumably Linnæus' also, comprised our *consobrina*, *ampelophaga*, *ericeti*, *pusilla*, and possibly (the dark fusco-greenish form only fitting that insect) the northern patellated species; and it would seem absurd to retain the name *oleracea* for any one of these insects. Thomson, who also should be an authority on Swedish species, considers Linnæus' and Gyllenhal's *oleracea* as identical, and adopts most of the vars.

Our old *oleracea* (*pusilla*, Dufts.) occurs, usually in pr fusion, all over the country, in meadows, woods, waste and cultivated lands. Both Dr. Power and Mr. Brewer have it from gardens.

I have already expressed my conviction that *pusilla* and *montana* are specifically identical (having intermediate links); and I shall not be surprised to find the present continental notion of *oleracea* also included with them. It seems to differ from *pusilla* very much in the same way as (or, indeed, in a lesser degree than) that insect does from *montana*. I have examples from a marsh on Wimbledon Common, which in their larger size and coarser punctuation would, compared with *pusilla*, seem to be *oleracea* proper; but their colour does not accord with that given by the authorities, being dark violet-blue instead of brilliant green. These would seem not difficult to connect with *pusilla*. The extremes of the insect called *G. montana*, compared with types of *pusilla*, are smaller, shorter, wider, with shorter and stouter antennæ and a rounder and less projecting humeral callus to the elytra, which are scarcely perceptibly punctured; their colour also is dull dark blue. But there would seem to be no limit to the powers of variation in the members of this genus. I captured in September last, in Coombe Wood, one specimen of an insect which should be in the *oleracea* section, but which, from its very long and thin antennæ and legs, cannot be referred with any degree of certainty to any species of which a description has been as yet published. I feel sure that a judicious synthesis is much wanted in *Graptodera*, to say nothing of other genera.

58. THYAMIS AGILIS, Rye, Ent. Mo. Mag., vol. v, p. 133 (described).

In Sept. 1863, I captured at Headley Lane, Mickleham, about a dozen examples of a large *Thyamis*, which I was unable to refer to any described species. I have subsequently found another specimen in the same locality; and there appear to be two very old examples of it from "Gog Magog," Cambridge, in Dr. Power's collection.

It has been sent to Herr Kutschera, who returns it as a new species, and is most closely allied to *T. tabida* (*verbasci*, Auct.), compared with which it is smaller (the largest specimen being rather less than the smallest *tabida*), not so light in colour, with the thorax more evidently and the elytra more strongly and less closely punctured, the third joint of the antennæ not longer than the second, and the spur terminating the posterior tibiæ very much shorter and scarcely perceptibly curved.

59. THYAMIS LURIDA, Scop., Kutsch., Allard ("L'Abeille"), nec Gyll.; G. R. Crotch, Cat. Brit. Col., Ed. 2.

The species formerly known to us as *T. brunnea* having been referred to *T. castanea*, it now appears that the true *brunnea*, Dufts. (*lurida*, Gyll., var. 1), is mixed in our collections with *T. lurida*, Scop. Both species are stated to vary much in colour, and apparently also in punctuation; but *brunnea* is to be distinguished by much greater convexity and by its elytra being much more curved laterally, with the shoulders effaced, no projecting humeral callus, and the apex of each elytron strongly rounded. *T. lurida* is said by M. Allard to have only *some analogies* (!) with *T. brunnea*, and they are separated by about fifty pages in his work; but it will certainly give any one who has a moderately large series of old *lurida* a puzzling day's work before he will be able to satisfy himself as to the specific difference of these two insects.

60. **Thyamis canescens**, Foudr.; G. R. Crotch, Cat. Brit. Col., 2nd Ed.

The specimens belonging to Dr. Power which were named as above by M. Allard, and queried in Mr. Crotch's "Catalogue," have been returned by Herr Kutschera as *T. membranacea*, Foudr. (*teucrii*, All., *minuscula*, Wat. Cat., nec Foud.) immature; from which insect it certainly seems to me impossible to separate them.

61. **Thyamis Poweri**, Allard; Ent. Ann., 1867, 75.

Dr. Power has shown me two of the specimens upon which this species is founded, and which have been returned to him from M. Allard. These are, in my opinion, nothing but *T. gracilis*, Kuts., differing *inter se*, and neither of them possessing *all* the characters given by M. Allard,—which are at most not very pronounced.

62. **Thyamis Waterhousei**, Kutsch.; Ent. Ann., 1867, 97.

This insect, which has doubtless escaped the recognition of British Coleopterists, as it appears to have been a stumbling-block to certain of their continental brethren, may briefly be described as *T. flavicornis*, with the six apical joints to its antennæ more or less blackened. I possess two specimens, taken at Mickleham, perfectly identical with Mr. Waterhouse's type returned by Herr Kutschera.

M. Allard (in "L'Abeille"), quoting from memory, appears to be quite confused with regard to this species, evidently having in his mind Mr. Waterhouse's insect next hereinafter referred to; and De Marseul, from the position in which the species appears in his Catalogue, would seem to have followed M. Allard's mistake.

M. Thomson, Skand. Col., viii, p. 183, having only Kutschera's description before him, sinks *T. Waterhousei* as a synonym of *pratensis*, Panz., Gyll.; an insect concerning which no two Entomologists have yet agreed, and of which Kutschera (Wien. Monat., 1864, Beitr., 301) remarks that, judging from the varieties and different sizes, it would seem that Gyllenhal has probably mixed together several similar but distinct species; and that the characters he gives cannot in their entirety be applied to any of the species that would appear to be allied to it in size and colour, such as *T. lycopi*, *curta*, *substriata*, *monticola*, *ballotæ*, or *juncicola*.

Thomson's insect, which from its position, &c., certainly seems to agree with *T. Waterhousei*, is stated by him to be rather rare, and found in sandy places.

Gyllenhal, on the contrary, says his *pratensis* is common, occurring in grass and on plants.

The *pratensis* of Foudras is *exoleta*, Wat. Cat. (*femoralis*, Marsh.).

The *pratensis* of Allard (1861), which that author describes at p. 137 as new, without references to former authors, is at p. 832 re-named *curta*, in consequence of his subsequently discovering what he considered the true *pratensis*, Panz. M. Allard's second notion of *pratensis* is thought by Herr Kutschera very likely to be a var. of *femoralis*, Marsh., but is by M. Allard ("L'Abeille") identified with *longipennis*, Kuts. M. Allard's second *pratensis* is also stated by Herr Kutschera to be possibly identical with *T. Waterhousei*, but for the presence of a dark apex to the hinder femora, and the absence of a reddish apex to the abdomen in the former. From M. Allard's saying in his latter work that "*mon* nom de pratensis" has priority, it would seem that he has forgotten Panzer.

Of older authors it appears that the *pratensis* of Ent. Heft. is composed of various species, including our *suturalis;* Illiger considers it as a var. of *atricilla*, &c., &c. Kutschera remarks that Stephens, Redtenbacher, Zetterstedt and Bach adopt Gyllenhal's species, without adding anything to a knowledge of it; and that he finds it represented in collections by the species above alluded to, as well as by *pellucida* and *lævis*. He himself appears to think it comes nearest to *ballotæ*, an opinion in which Mr. Waterhouse has concurred, as testified by the synonymy of his "Catalogue."

The *T. ferruginea*, Foudr., of Mr. Crotch's "Catalogue," 2nd Ed., if depending upon a specimen in Dr. Power's Collection (named, as I am informed, by M. Allard), must I think be referred to *T. Waterhousei*. The true *ferruginea* was, of course, well known to Herr Kutschera when describing the latter species. It is remarkable for its strong, close, and confused punctuation.

63. **THYAMIS PATRUELIS**, Allard; Ent. Ann., 1868, p. 74.

Mr. Waterhouse's "sp. 26," originally named *lateralis*, Ill., by M. Allard, and subsequently described by him a *patruelis*, has been returned by Herr Kutschera as *lateralis*, Ill., var., in spite of the discrepancies pointed out by Mr Waterhouse between the two insects. Herr L. v. Heyden, Berl. Ent. Zeit., 1867, 383, records Mr. Waterhouse' insect from Frankfort and Styria.

I have received further examples from Dr. Sharp of th species taken by him in a salt marsh at Dumfries, and whic I mentioned in the last "Annual" as not separable fro Mr. Waterhouse's examples taken at Darenth on *Verbascum*

These I now find are distinct from the latter, which, however, they very closely simulate. They seem to be intermediate between it and *T. melanocephala*, Gyll., and, if specifically distinct from that species, as I think they must be, are apparently undescribed. I have long had a single and very dark specimen of the Dumfries insect in my collection as *melanocephala*, var. extrema.

64. PSYLLIODES NIGRICOLLIS, Marsham.

Herr Kutschera, as well as M. Allard, considers this insect specifically distinct from *P. chrysocephala.* But they occur in company, sometimes with other extreme varieties; and the statement that the thoracic punctuation is less distinct, and the striæ of the elytra less deeply punctured, than in that species, is not in the least borne out by the specimens I have examined.

Herr L. v. Heyden (loc. cit.), mentioning the insect to have been recorded only from England and Dieppe, notes a single specimen from Offenbach-am-Main.

65. PSYLLIODES INSTABILIS, Foudr., All.; Kutsch., Wien. Monats., 1864, Beitr., 368.

The *P. picipes* of Mr. Waterhouse's Catalogue (a single specimen), long suspected to be not identical with *picipes*, Redt., has been returned as *P. instabilis* by Herr Kutschera. I am quite unable, beyond a slight colour difference, to separate this specimen from that hitherto representing *picipes* in my own collection, and which, from possessing intermediate links, I think is only a variety of that common insect now called *herbacea* by Allard, but *cuprea* by Kutschera.

66. SPHÆRODERMA CENTAUREÆ, Steph., Wat. Cat.

Herr Kutschera (Entomologist's Monthly Magazine, vol. v, p. 164) objects to the substitution of this name for the usually recognized *testacea*, Fab., in spite of the two types of the latter insect in the Banksian Coll., Brit. Mus., agreeing with the larger species, known on the Continent as *cardui*, Gyll., because Fabricius, in Ent. Syst. and Syst. El., applies to his insect the words "*thorace et elytris lævissimis*," which character cannot, as Herr Kutschera thinks, be applied to the larger species. But such negative evidence surely cannot be allowed to annul the types named by Fabricius himself, which I have examined, and which are very large specimens of the *testacea* of Wat. Cat.; especially since it must be remembered that Fabricius described his insect when the other and less punctured one was unknown, —that there really is very little difference between the two, both being delicately punctured,—and that Fabricius' magnifier was probably not quite so strong as a "Coddington."

67. TRICHOPTERYX ANTHRACINA, Matthews; Auct., Ent. M. Mag., vol. v, p. 9.

The Rev. A. Matthews records the capture of many specimens of this insect in Sherwood Forest in 1867. It was originally described by him in the E. M. Mag. from the Canaries, and has, apparently, not hitherto been recorded as occurring elsewhere.

Its small size, deep black colour and short black antennæ easily distinguish it, according to Mr. Matthews, from all others of the first division of the genus, in which it must be placed and in which the thorax is much dilated at the base, with the posterior angles produced beyond the shoulders of the elytra.

Mr. Matthews re-describes the species.

68. TRICHOPTERYX OBSCÆNA, Wollaston, Cat. Mad. Col., p. 35, 1857 (*Acrotrichis*).
Guerinii, id., Col. Atlant., 100 (nec Allib.).
Rev. A. Matthews, l. c., p. 10.

Mr. Matthews also records the capture of Mr. Wollaston's Madeiran species by himself in Sherwood Forest, in 1867; and states his reasons for now considering it as distinct from *Guerinii*, with which he formerly associated it. It belongs to the group with pale or rufescent elytra and the thorax scarcely dilated at the base; and appears to differ from *Guerinii* in the comparative length of its elytra and in its sculpture.

69. ACTIDIUM, Matthews, Ent. M. Mag., vol. v, p. 12 (characterized).

Mr. Matthews, loc. cit., gives diagnostic characters for a new genus which he founds to include *Ptilium transversale*, Er., *P. concolor*, Sharp, and *P. coarctatum*, Haliday, all of which differ widely from *Ptilium* in every anatomical detail, and for which the most obvious superficial distinction will be found in the base of the thorax, which is not, as in *Ptilium* proper, fitted to the shoulders of the elytra, but overlaps and lies upon them, so as partly to conceal the scutellum.

There seems some doubt as to whether Thomson's *elon-*

gatum or Haliday's *coarctatum* will stand for the specie which they both represent; both descriptions having bee published in 1855.

70. **Ptilium Halidaii**, Matthews, l. c., p. 12 (described

Mr. Matthews describes this species from a single speci men, found by Mrs. Matthews under the bark of a dead oa tree in Sherwood Forest, in 1867. It appears to be allie to *P. angulicolle*, but to be easily distinguishable from tha insect by the two deep converging lateral lines on the thora which is nearly destitute of any central channel.

71. **Euplectus punctatus**, Mulsant, Opusc., 12 Cah 1861, 76; G. R. Crotch, l. c., p. 65.

Mr. Crotch records two specimens of this insect; on taken at Hampstead, by Mr. E. W. Janson, the other b himself (no locality).

The species, originally described from Swiss examples, an subsequently (Berlin. Ent. Zeit. 1867, 377) recorded by He L. von Heyden from Germany, is, according to Mulsan like *E. Karsteni*, Reich., but distinguished from that inse by its larger size, more flattened shape, and laterally mo dilated thorax.

7, Park Field, Putney, S.W.
December, 1868.

HYMENOPTERA.

NOTES ON HYMENOPTERA.

BY FREDERICK SMITH.

IN recording the discoveries of Hymenopterous insects during the past season, it occurs to me, that great expectations will very naturally arise in the minds of many Entomologists in consequence of the remarkable summer of 1868; its tropical character, continued even up to the commencement of autumn, will long be remembered. Three months of uninterrupted fine weather, together with a continuance of almost tropical heat, is rarely registered in the Entomological Calendar.

The practical observation of the habits of Hymenopterous insects is in so great a degree dependant upon weather, suitable for that purpose, as, in itself, to determine with tolerable precision the success that will attend the labour of the Hymenopterist.

Experience has shown, that the extremes both of heat, cold, or wet, are alike unsuited to the development of Hymenopterous insects, and it would be difficult to decide which of these extremes is most destructive to insect life. The extreme of heat was experienced during the past summer, and the result of the season's campaign proves, I think, the truth of my opinion.

There are one or two effects of the character of the past season, upon the aculeate Hymenoptera, that could not, think, fail to impress itself upon every observer of thes insects,—and that has been the diminutive size of the greate portion of them. I cannot perhaps better illustrate this than by mentioning a circumstance that occurred t myself.

During the first week in June I visited Bournemouth and, on one of my collecting excursions in the neighbourhood, I observed several bees which I imagined to be th *Osmia bicornis;* and, in consequence of their apparently dimi nutive size, I was induced to capture three or four of tha very common insect; subsequently, when about to set an prepare them for my collection, I was perfectly astonished o discovering that they were minute specimens of *Bombu muscorum*, examples of the worker sex. Later in the season about the middle of August, I found workers of the sam bee equally small, at Cromer in Norfolk. The same un usual diminution of size was observable in the majority o the solitary bees throughout the season.

I attribute the development of these small bees to an in sufficient supply of nourishment; day succeeded day, whe the heat was so intense that bees could only venture fort for a short time in the morning; during the hours of mid day, no bees were to be seen, and those flowers which the usually frequent during the months of July and August flowered, and ran to seed so rapidly, that the usual suppl of food was unattainable. During my experience, I do no remember any season when Hymenoptera generally were s scarce; and those that were found, were mostly so bleache and faded by the intense heat of the sun, as to render them useless as specimens for the cabinet.

Before I proceed to enumerate the discoveries and capture of rarities, I must refer to the last paragraph of the pape which I contributed to the Annual of 1866, it is as follows:—"In 1864 I collected a large number of the larvæ of *Eriocampa ovata*, and, in the spring of the following year, bred as many as fifty flies, but all proved to be females." Of this very common species of saw-fly the male is not known; the female is very abundant in the neighbourhood of Lowestoft, where the alder, upon which its larva feeds, grows in almost every hedge, and at the sides of every ditch; I have taken some hundreds of examples in the hope of finding the male. When collecting the larvæ in 1864, I selected those of the largest size, judging they would be soonest full fed, and therefore give me the least trouble in attending upon them; and no doubt such proved to be the case, but it subsequently occurred to me, that by adopting this course, I had possibly collected the larvæ of females only, the male larvæ being, probably, always smaller; this supposed error however I determined to rectify; therefore, being at Lowestoft last season also, I availed myself of the opportunity, and collected a large number of larvæ of all sizes, preferring those of the smallest size I could find; many of these were not more than the eighth of an inch in length. The feeding of these larvæ occupied about three weeks; each one, when it had acquired its full growth, buried itself in mould, contained in a large flower-pot.

In the month of April, in the present year, the flies began to issue forth, and continued to do so up to the end of the month; the total number being 132; all proved to be females, with one solitary exception, and that is a male of a species of *Nematus*. The mystery, therefore, that has hitherto existed with respect to the male of *Eriocampa*, is undispelled. The solution of this mystery is probably to be sought for in another direction. Be this as it may, we are led to the inquiry as to the possibility of the fertilization of the eggs of *Eriocampa ovata*, without the intervention of th male sex; this may probably be a suggestion that will b summarily dismissed by many, as quite untenable; let however induce other Entomologists to investigate the sub ject. I have myself, for several years past, lost no oppor tunity of endeavouring to solve the problem without an satisfactory result; another person may be more successfu in his researches. *Eriocampa ovata* is not the only saw-fl whose male is unknown, whereas the females are extremel abundant.

In my communication to the Annual of last year, I gav some account of a species of wasp belonging to the genu *Polistes*, which was caught alive by a lady at Penzance i the summer of 1866; and again in 1867, three specimen were taken, several others being observed at the same tim I remarked upon its close resemblance to *Polistes biguttatu* a South American insect, and suggested the possibility of it being an imported species; but, at the same time, remarke upon the extreme difficulty of suggesting a means whereb it could have been conveyed from South America or Brazi

My correspondent undertook to make every inquiry as t what vessels had entered the harbour from America; in Jul last I received the following information: "I think I hav at last solved the problem of the *Polistes*. After trying in vai to obtain any intelligence of shrubs or unsawn wood bein imported from South America, a remark of my sister' turned my thoughts in another direction. She told me, tha the common wasp is often very troublesome to butcher by its taste for raw meat. Now there is a regular trad between Penzance and South America in raw hides, and i occurred to me as possible, that the South American wasp might have settled on the hides, and so have been wrappe up and entangled in them."

It was also ascertained that the ship conveying the hides arrived at Penzance on the 25th of July, 1866, and the *Polistes* captured about the 15th of August. In 1867 the same ship entered the port of Penzance on the 31st of July, and the *Polistes* was again taken during the first week in August. The wasp was shown to the captain of the ship, who at the same time was asked if he had ever observed any insects like it on board; he replied, "they had often plenty of flies and beetles on board," and after attentively looking at the wasp he said, "no doubt it came from his ship, as he had seen hundreds about it when sailing down one of the branches of the La Plata."

This explanation, I think, fully accounts for the capture of the *Polistes;* and, at the same time, it suggests a way by which many carrion beetles may be conveyed to this country, in a way that might not occur to Entomologists who pick up such insects in the neighbourhood of Penzance, as well as near ports in other parts of this country.

It is a remarkable circumstance that Mr. Douglas, of the Custom House, should capture the same species of *Polistes* in the tobacco warehouse at the St. Katherine's Docks, in the month of August last. He kindly forwarded the insect to me, but, at the same time, could not even suggest the country from whence it came, as the tobacco was imported from all parts of the world. It may not, however, have been imported with tobacco; and the insect might have flown from the hold of some ship lying in the docks.

At page 87 of the Entomologist's Annual for 1865 a record of the discovery of *Formica exsecta* will be found, and it will be seen that only the workers were discovered. The following season I again visited Bournemouth, with no better success; not being able to do so before the month of

August, and it was not until the month of June this year that I again went to that locality.

So much fine hot weather preceded the time of my visit, that I calculated upon a more rapid development of the sexes, and probably I was right to some extent; but, although I found, during the first week in June, plenty of the sexes spun up in the their cocoons, I did not succeed in obtaining a single perfect ant of the male or female sex. Finding myself thus disappointed, I resolved upon bringing home, and establishing a colony of this ant in my own garden.

On the morning of my leaving Bournemouth, I rose early, and, taking a spade and a tin box, I set out for the purpose of obtaining a nest of *Formica exsecta.* At the early hour of five o'clock, I found a nest with its inmates apparently in quiet repose, not an ant was to be seen; I carefully marked out the size of my tin case round the nest, and soon succeeded in digging up a good sized turf, on which, in a perfectly undisturbed state, was the nest I so longed to obtain; in depositing the nest inside the tin case, I scarcely disturbed the ants; a few issued forth to see what was going on, but as I moved them so gently, they appeared satisfied, and soon retreated back into the nest. With great care I brought my treasure to London, and on the evening of the same day had the satisfaction of seeing a nest of *Formica exsecta* established in my garden at Islington.

It was a great pleasure thus to have, as it were, completely overcome a great disappointment; a week or two would, I thought, produce me the sexes of the ant I had so long desired to obtain. Alas! how little do we foresee coming events; in this instance, they cast no "shadows before;" the fulfilment of my wishes appeared a mere matter of time, as to when they would be consummated.

On the following morning I visited my ants' nest, when, what was my astonishment, on beholding a line of black ants extending from the nest to the root of a lilac tree in the corner of the garden; one troop of ants were on their way from the tree to the nest, whilst another was travelling in the opposite direction; each ant laden either with a larva or pupa of *Formica exsecta.*

My hopes, plans and arrangements now appeared to be completely destroyed; on reflection, however, I consoled myself with the hope that the black ants, *Formica nigra,* were only committing a raid upon the other species, after the manner of the slave-making species *Formica sanguinea.*

This idea, on mature consideration, not only revived my hopes, but even added to my previous satisfaction; and for this reason: I was, in all probability, about to make a great discovery; I was about to prove that which had escaped the notice of all previous observers,—*Formica nigra* was to be discovered in the character of a slave-making ant. I therefore allowed the pillage to go on; which it did, more or less, for a day or two; I even observed the black ants dragging the workers of *Formica exsecta* off to their own nest.

I was, however, doomed to be again disappointed; in a few days every larva, pupa and worker was conveyed into the nest of *Formica nigra,* and from that time, the most careful watching failed to discover any trace of *Formica exsecta;* I have not any doubt of the whole contents of the nest having become the food of the colony of the black ants.

In July last, Mr. Rothney visited Bournemouth, just five weeks subsequent to my doing so; and on the 14th of the month he wrote to me as follows:—"I discovered a nest of '*exsecta*' in a most secluded spot on the cliffs facing the sea; and, most fortunately, found all the sexes." At this time, the males and females had quitted most of the nests, so that about the last week in June would usually be the best time to look for those sexes. Mr. Rothney continues, "in taking them, the workers swarmed all over me, face, neck, arms and legs; I got fearfully punished. The sexes were also found in two other nests, but in about twenty others I failed to find a single male or female."

Mr. Rothney also obtained the males and females of *Formica aliena*, the males in abundance, but only seven females; this capture is the first that has been made in this country of those sexes. This insect is regarded by Dr. Nylander as a variety of *Formica nigra*, and its differences from that species are extremely slight; that which is most readily observable is the absence of pubescence on the scape of the antennæ, and on the legs. In *F. nigra* the microscope shows those parts to be sprinkled with long hairs; the habit of the insect is also different; it is usually found on exposed bare patches on cliffs or commons, and it has a way of tunnelling under the ground, and of casting up little hillocks, after the manner of the mole; the worker has the thorax usually of a pale testaceous colour; the pubescence is not to be found on the scape or legs of any of the sexes; it is not known whether any difference in the form of the sexual organs would separate the males.

In June I obtained all the sexes from a nest of *Formica congerens;* I searched in the nest of this ant for the *Tinea ochraceella*, but without success; when I first discovered the nest of this ant, a few years ago, I observed a number of minute moths running among the ants, but it did not occur to me at the time, that it might probably be a rarity.

The following is a list of the rarer species of Hymenoptera taken at Bournemouth by Mr. Rothney:—*Mutilla Europea* and *ephippium; Eumenes coarctata; Panurgus calcara-*

tus; *Nomada baccata* and *Halictus prasinus*. At Stowborough Heath, near Corfe Castle, Dorsetshire, *Dasypoda hirtipes*, abundantly; and at the same locality, a beautiful species of *Odynerus*, new to the British fauna; this insect is described in the Catalogue of Hymenopterous Insects, pt. 5, Vespidæ, published by the trustees of the British Museum. In the national collection are two specimens of this wasp, supposed to have been taken in Polish Ukraine, S. W. Russia, but the locality is not quite certain; they were taken by Dr. Dowler, who formed a large collection of insects, whilst on a tour through Europe, the whole of which he presented to the national collection in 1843; the description of the insect is the following:—

Odynerus basalis, Smith. Female.—Length 5—6 lines.—Black: the basal segment of the abdomen red, tile-coloured. Head and thorax rugose-punctate and opaque; the clypeus produced and deeply emarginate at the apex, and with a yellow transverse band at the base; a narrower yellow line at the inner orbits of the eyes, running from the base of the clypeus to the emargination of the eyes; a minute yellow spot between the antennæ at their base, and another behind the eyes; the scape of the antennæ beneath and the tips of the mandibles ferruginous. Thorax: the anterior margin of the prothorax above, an ovate spot beneath the wings, the tegulæ, the posterior margin of the scutellum and of the post-scutellum, yellow; the legs ferruginous, with the coxæ and trochanters black; wings pale fulvo-hyaline; the nervures rufo-testaceous, becoming bright ferruginous at the base of the wings; the stigma rufo-testaceous; the tegulæ have a central dark stain. Abdomen: the posterior margins of the first and three following segments yellowish-white; the band on the second segment widened laterally; the basal segment has sometimes a central black line.

Var. A. The yellow line at the base of the clypeu
obsolete.

Var. B. The sides of the metathorax ferruginous, and th
basal segment of the abdomen with only
minute central triangular black spot.

Mr. Rothney has bred the rare *Crabro capitosus* fron bramble sticks collected at Ipswich; he has also taken tha scarce bee *Stelis phæoptera* in the flowers of the mallow a Addiscombe.

Having had an opportunity of examining the Hymenoptera bred from bramble sticks by Mr. Rothney, I detecte among them a new British bee; it is a species of *Prosop* most nearly allied to *P. dilatata*, but is a smaller insect four specimens were bred, two of each sex.

Prosopis rubicola. Male.—Length 2¼ lines.—Black the head and thorax closely and evenly punctured, opaque the metathorax with a triangular space at the base, define by a sharp ridge, rugose; the head, before the antennæ yellowish-white; the scape of the antennæ short, broadl dilated and black, with a minute yellow spot at the ape outside; the flagellum, except the basal joint, fulvous beneath; mandibles entirely black. Thorax: a minute yello spot on the tegulæ in front; the wings hyaline and iri descent; the anterior tibiæ yellow in front, and the apica joint of the tarsi testaceous; the extreme base of the inter mediate tibiæ and the basal joint of the tarsi yellow; one third of the posterior tibiæ at their base and the first join of the tarsi yellow. Abdomen shining, finely and closel punctured.

Female.—Closely resembles the male; the head an thorax opaque; the abdomen shining; an impressed lin extending from the anterior stemma to the insertion of th antennæ, a similar shining impressed line close to the inne orbits of the eyes; a minute yellow spot on the front of the tegulæ and the base of the posterior tibiæ yellow; the apical joint of the tarsi testaceous; the abdomen very delicately and rather distantly punctured.

Bred from bramble sticks collected either at Shirley or Ipswich, but supposed to be from the latter locality.

At Bournemouth, during the first month of June last, I discovered a nest of *Tapinoma erratica,* in which I found all the sexes; the males and females winged, the latter sex was taken by Mr. Grant at Weybridge in 1843, but only two apterous specimens; the male I had not previously either taken or seen.

At the commencement of the season, in April and May, the aculeate Hymenoptera appeared in considerable numbers, giving promise of an abundant season; early in June however the unprecedented heat of the weather caused a remarkable decrease in their numbers; at Bournemouth they were becoming extremely scarce during the first week of that month; and it is certainly a remarkable fact, that the majority of these insects captured in July, August and September, were mere dwarf representatives of their species.

In the Entomologist's Monthly Magazine, Mr. Bold records the capture of two species of aculeate Hymenoptera; he also minutely describes both the insects; one *Passalæcus monilicornis* of Dahlbom, the other *Pompilus melanarius* of Vander Linden; both are new to the British fauna. With regard to the latter insect, I am answerable for having misled Mr. Bold, by informing him, that I believed it to be the *P. melanarius;* I am now quite sure that I was in error in so doing. On a careful examination of the insect, a specimen of which was given to me by Mr. Sharp, who captured it in Dumfries, I observe first, that it is a very close ally of *Pompilus niger,* from which it scarcely differs, excepting in the neuration of the wings; it is a little mor pubescent about the head and thorax; the neuration of th wings of *P. niger* varies greatly, the third submarginal ce is sometimes triangular, petiolated, or, occasionally only con tracted towards the marginal cell, but I have never seen specimen of *P. niger* agreeing with Mr. Bold's insect; would be very desirable that a series of specimens should b obtained, including the male sex, when some strong specifi character might be found, and the insect satisfactorily dete mined as a new British species, which I am inclined to con sider it; I cannot find any description of an European *Pom pilus* that suits it.

Having visited Cromer in August last, I will give a lis of such aculeate Hymenoptera as I noticed in that extrem north-east corner of Norfolk; it is true, that in consequenc of the long-continued summer weather that preceded m visit, the list will give, probably, a very inadequate idea c the species usually to be found there in the month of Augus but I know no work that contains any account of the captur of a single Hymenopterous insect from Cromer. Man Coleoptera have been registered as occurring there, and, if may draw my conclusions from the general character of th neighbourhood, I should certainly say it is a locality rich i its Hymenopterous fauna. The beautiful hills, valley woods and open commons, that diversify the surroundin country, offer every kind of situation usually resorted to b the aculeate Hymenoptera.

List of bees.—*Colletes succincta* and *Daviesana; Pro sopis signata; Sphecodes gibbus* and *rufescens; Halictus ru bicundus, leucozonius, cylindricus, albipes, flavipes, Smeatl manellus, æratus, morio, villosulus, fulvicornis, minutu nitidiusculus*, and *H. malachura.*

In my Monograph of the British Bees, I have regarde

H. malachura as a mere variety of *H. cylindricus*, and I was partly led to do so from the circumstance of finding the same opinion expressed by Mr. Kirby in an interleaved copy of his Apum Angliæ; and also from the fact of my never having found the insect in the London district, whence Mr. Kirby received it; I was also unable to detect any good specific difference in the typical specimen, in consequence of its faded and imperfect condition.

I have now the pleasure of re-establishing this species, and of pointing out the particulars in which it differs from *H. cylindricus*, which it closely resembles; it differs from that species in having the clypeus less produced, the tegulæ black, the base of the metathorax less coarsely sculptured, and in wanting the sharp elevated ridge at the margin of the truncation; the legs are entirely black, and the pubescence whiter; the margins of the abdominal segments are not rufo-testaceous.

I am also inclined to think, that the *Halictus ruficornis* will prove to be the male of *H. malachura*.

Of the genus *Andrena*, I only observed three species,—the *Andrena simillima, tridentata* and *minutula*. I have only once before taken *Andrena tridentata*; in 1864 I found a few specimens on the ragwort, near Chirstchurch, Hants; I found it on the same flower at Cromer. Only one species of *Nomada* occurred, *N. solidaginis; Bombus muscorum, sylvarum, fragrans, terrestris, lucorum* and *lapidarius*.

Of the fossorial group I found very few, although, in ordinary seasons, August is the month when they are usually abundant; the following are all that I noticed:—*Tiphia femorata; Pompilus fuscus, gibbus, plumbeus; Ammophila sabulosa; Tachytes pompiliformis; Mellinus arvensis; Crabro Panzeri, Walkeri, obliquus, cephalotes, cribrarius*, *albilabris* and *brevis; Oxybelus uniglumis; Odynerus parietum; Vespa vulgaris, germanica* and *rufa.*

The wasps were very abundant, particularly so in th butchers' shops. I was pleased to find that the butchers Cromer have observed that wasps, if unmolested, are pe fectly harmless, and extremely useful in carrying off th large blow-flies; the butchers at Cromer are always, the say, glad to see plenty of wasps. Some people begrudg wasps a little fruit, and appear to have no idea of the man ways in which these insects are beneficial.

Mr. Algernon Chapman has this season captured the ra *Odynerus crassicornis*, at Abergavenny; and also, the equall rare *Pompilus bifasciatus.*

I have previously remarked upon species of saw-flies th are of common occurrence, of which only the females hav been discovered; and I have shown that breeding numbe of one of these species has failed to produce the male se This is, I admit, no conclusive proof of the non-existence that sex, but we are led to ask ourselves, whether copulatio at remote intervals is not, in these species, the law whic regulates their continuance.

A subject equally interesting, and one that embraces pe haps even more startling phenomena, is the law that d termines the development of the sexes in insects. A mo interesting paper on this subject appeared in the Annals a Magazine of Natural History for 1867. This paper is translation from the "Comptes Rendus." The author of th paper, Landois, endeavours to prove that the sex, in insect is not determined in the egg state, and that it entirely depen upon the abundance or deficiency of food supplied to th larva; this naturally calls to mind the opinion of Huber, wh refers the cause of difference of sex entirely to the quality the food with which the larva is supplied; the developme of the queen of the hive-bee is induced by the larva being supplied with what is called royal jelly; whilst food of a less nutritive, or less stimulating character, causes the development of males and worker bees.

Dr. Siebold, in his treatise on Parthenogenesis, appeared to have settled the law of sexual development in insects most satisfactorily; and to have proved beyond the possibility of mistake or illusion, that worker bees, as well as queens, originate from eggs fecundated by the queen, whereas males are the product of non-fecundated eggs. Landois asserts, however, that independent of the eggs, destined to produce males and workers, being deposited in different-sized cells, that the food supplied for the nourishment of the young bees is not the same in the two cases; this, Landois observes, led him to try the experiment of transferring eggs deposited in worker cells into the larger cells of the drones; a similar transformation being made of the larvæ in drone cells into those of the workers; thereby causing an opposite production in each case. The experiment was tried, and, after one or two failures, the desired result was attained.

Landois discovered that it was necessary to transfer the eggs without touching them. In order to accomplish this, a piece of the bottom of the cell, upon which the egg was deposited, was cut away with a small pointed knife; the fragment on which the egg lay was then transported into the other cell, worker bees were developed from male eggs, and *vice versâ*. The experiment was repeated several times with the like result, and therefore, according to these experiments, it is not the fecundation of the eggs, or the non-fecundation, to which can be attributed the production of females, workers or males: it is, on the contrary, solely dependant upon the quality and quantity of the food with which the larvæ are nourished.

Professor Siebold has combated the theory of Landoi and maintains his own views of the parthenogenesis of tl males; and refers to the results that have been obtained l anatomical and microscopical investigations of the larvæ insects in the process of development in the egg; he cons quently expresses the greatest doubt of the correctness of t theory set up by Landois.

In support of his own views, Siebold refers to the gre work of Herold on the development of the cabbage butterfl wherein it is shown, that germs of the undeveloped repr ductive organs of the sexes are distinctly visible; and tl discovery, he has shown, has been confirmed by Weism in his remarkable work on the embryology of insects.

In addition to this, Dr. Siebold combats the opinion Landois, that abundant nourishment produces females, a a scanty supply males, by quoting the authority of some the most experienced observers of bee life, who all agr that all larvæ up to the sixth day receive the same kind nourishment; that which is called food paste, upon whi the queens are abundantly fed until they change to the pu state; whilst the larvæ of workers and drones, after t sixth day, receive a coarser kind of food, so that here see workers and drones receiving the same kind nourishment.

Assuming that the law of development of the sexes applicable to the whole of the Insecta, in what way can apply the theory of Landois to the Lepidoptera ?—t cabbage butterfly, for instance; the quality, as well as t quantity of the food, is the same, and all the larvæ are equa free to consume the same amount of food. The same is t case in a very large number of Coleoptera; we may insta those tribes that feed upon wood, and also the necrophag beetles, as well as many others.

Take the case of the wasp: it is certain that all the wasps developed in spring are, in the larval condition, dependent upon a single wasp, the queen, for nourishment, and all these are workers; the males on the contrary are produced in autumn, when the nest is most populous and food most abundant.

Among solitary bees I have observed, that those belonging to the genus *Colletes* frequently arrive at their perfect condition without having consumed the whole of the food stored up for them; I am unable to say which sex was developed from such cells, but here was a superabundant supply; I have not noticed a similar occurrence in the nest of any other bee.

The case of the genus *Anthidium* is remarkable, and appears to be strongly opposed to the theory of Landois. The males, in this genus, are always much larger than the females; the male carries off the female and copulates in the air; many males are twice the size of the females; in this case, it would certainly appear that the males would require even a larger quantity of food than the females.

Let us also take into account the economy of a fossorial and also a vespidious insect. The genus *Cerceris* is an example of the former group; now some of the species of this genus store up rhyncophorous beetles; in this case, both sexes are undoubtedly supplied with food of the same quality, when in the larva state.

Among the solitary wasps, we find the genus *Odynerus* storing up a number of caterpillars, all certainly those of the same species of moth.

The theory of Professor Siebold, that of parthenogenesis, is applicable to the development of all the Hymenopterous insects whose economy I have investigated, whilst that of Landois is certainly not; the objections to it appear to me to

be insurmountable and so conclusive, that I cannot thi
otherwise than that the author has drawn his deductio
from insufficient evidence and from illusory observation.

I have introduced this subject in the hope that so
readers of the Entomologist's Annual may be induced
follow up this interesting subject, and that the science
Entomology may benefit by their investigations.

NOTE.—I have just received from Mr. McLachlan
specimen of *Polistes biguttatus?*, captured at Liverpool,
Mr. Nicholas Cooke, in the office of a wool warehouse; it
certainly remarkable that this species only of the genus,
abundantly represented in species in Brazil, should be i
ported into this country.

27, RICHMOND CRESCENT, ISLINGTON.

LEPIDOPTERA.

On the British Species of Tortrices belonging to the Genus Eupœcilia of Curtis.

By R. McLachlan, F.L.S., Sec. Ent. Soc.

It is pretty generally known that the Entomological Society has undertaken to publish a synonymic Catalogue of British insects of all orders, which shall, as far as is possible, furnish native Entomologists with a list of the insects inhabiting these islands, and, at the same time, establish uniformity of nomenclature with the Continent, so far as this is consistent with recognized rules. Owing to the exertions of Messrs. Doubleday and Stainton the nomenclature of *Lepidoptera* is comparatively uniform, and this order will probably be one of the last that will receive attention on the part of the Society. But even here the *Tortrices* are in a most unsatisfactory state, and the published European lists yet contain a multitude of names of species, ranking as distinct, which should be reduced to synonyms; and the uncertainty respecting the British species plays a not unimportant part in producing this confusion. It is true we have the Monograph by Mr. Wilkinson, which so far as truthful and accurate description is concerned leaves little to be desired; yet the value of this work is nullified by the total omission of synonymy, and the utter regardlessness of care as to whether a species, referred to a continental author, be really that to which the name should be applied. By the absence of synonyms, no desire is shown to collate the species of British authors with those of the Continent. This is the more to b regretted as Mr. Wilkinson shows evidence of origina thought that could not have been but of the highest valu had he consented to forget insular prejudices, and to hav produced a Monograph that would not only have added t the knowledge possessed by his countrymen, but have instructed our continental fellow-labourers. By this tim Englishmen should remember that science must be catholic or it is not worthy the name of science.

That some one will be found to remove from us the stigm of possessing information, but keeping it to ourselves, I d not doubt. Yet there is earnest need of the advent of young and thorough-working British Lepidopterist, wh will undertake for once and all to enter into friendly relations with the leading men of the various countries of continental Europe. Were my own attention not preoccupied t its fullest extent in another order, I might be induced to act a pioneer to this desirable result, but working at *Lepidopter* is to me, to say the least, irksome, and I appeal to some fe of the multitude of collectors who possess every qualificatio for the work, to commence in earnest, and, by interchang of thought and examples with our continental brethren, undertake a thorough revision of the numerous family of *Tortrice* Owing to the earnest wish of an esteemed friend, I hav lately been in correspondence with Herr von Heinemann Brunswick, the latest writer on European *Tortrices*, respecting the species placed in our lists in the genus *Eupœcilia*, and from this and other sources offer the followin information for what it may be worth, premising that have not worked this limited subject exhaustively, and th I do not intend to follow it up by observations on oth genera.

It is not my intention to offer any remarks on the limi value of the genus *Eupœcilia*, restricting myself simpl to those species standing under that head in our latest Catalogue, and remarking that Heinemann, and Staudinger and Wocke, group our species with many others, placed by us in different genera, under the heading *Conchylis*. Here follows, then, a list of British *Eupœcilia*, which it will be seen is somewhat more extended than is the case in the last Catalogue.

Sp. 1. SODALIANA, Haworth (1812). *sodaliana*, Haworth, Steph., Doub., Stainton, Wilk.; = *amandana*, Herr.-Schf. (1849), Heinem., Staud. and Wock.

This large and striking species is perhaps scarcely a true *Eupœcilia*, and is placed by continental authors in *Phtheochroa*; the fore-wings show traces of tufts of raised scales. The neuration also differs; vide Heinem., Wickler, p. 92. It occurs but rarely in the south of England, and feeds upon *Rhamnus catharticus*. Haworth's type is in the British Museum.

Sp. 2. CARDUANA, Zeller (1847). *carduana*, Zeller, Herr.-Schf., Stainton, Wilk., Heinem. (*hybridella*, Hüb.? *hybridellana*, Doub. Cat.)

Not unfrequent in the south. Should it prove to be Hübner's species his name must take priority; by Staudinger and Wocke it is referred to *hybridella* without doubt, but Heinemann queries the identity.

Sp. 3. ATRICAPITANA, Steph. (Mus. Cat 1852.) *atricapitana*, Steph., Doub. Cat., Stainton, Wilk., Heinem., Staud. and Wock.; = *venustana*, Schläger.

Not common, but occurs in various localities in summer, in dry localities. The hind-wings differ much in the sexes, those of the ♂ being whitish-grey, with darker grey spotting or reticulation, whereas in the ♀ they are totally blackish-grey. Mr. De Grey informs me that he has observed th females on the flowers of *Senecio Jacobæa,* and suspects th larva to feed thereupon.

Sp. 4. DUBITANA, Hübner (1801). *dubitana,* Hüb., Treit. Steph., Herr.-Schf., Doub. Cat., Stainton, Wilk. Heinem., Staud. and Wock.

Apparently most common near Bristol, and has occurre in other localities. The English examples differ somewha from those of the Continent; in the latter the white portio of the fore-wings is strongly clouded with yellowish, wherea ours show scarcely a trace of this colour. According t Rössler the larva feeds in the flowers of *Senecio Jacobæa Cirsium lanceolatum, Picris hieracioides, Hieracium mu rorum* and *umbellatum.*

Sp. 5. ALBICAPITANA, Cooke (Zoologist, 1861, p. 7800) Ent. Month. Mag. vol. 3, pl. 1, fig. 1.

Not known to Herr Heinemann. Occurs at Howth i Ireland, and on the coast of Cheshire. Allied to *dubitana* but certainly distinct therefrom; the fore-wings are longe and narrower, with the hinder margin more oblique; th head greyish instead of clear white; the ground colour o the fore-wings greyish-white with numerous dark-gre markings, and with a broad dark-grey central fascia, mor or less interrupted, the portion on the inner margin bein the most distinct. The figure in the Entomologist's Monthl Magazine is characteristic. This may be *posterana* of Zelle (Isis, 1847), and if so, Mr. Cooke's name will drop. A insect sent under the name of *posterana* to Mr. Doubleday by Herr Lederer, is strikingly similar, yet not altogether satisfactory proof of identity, and it will be desirable to se and compare more examples. It is possible that Heinemann's *posterana* is distinct.

Sp. 6. MACULOSANA, Haworth (1812). *maculosana,* Haw., Steph., Doub. Cat., Stainton, Wilk.

Not uncommon in early summer in many places. A closely allied continental species, *purgatana* of Treitschke, is doubtfully distinct.

Sp. 7. ANGUSTANA, Hübner (1801). *angustana,* Hüb., Treitsch., Herr.-Schf. fig. 94, et Auct. Brit.; = *cruentana,* Fröl., Herr.-Schf., Heinem.

This is an abundant species. Schmid, according to Rössler, bred it from the flowers of *Achillea millefolium* and also from those of *Origanum vulgare.* But it doubtlessly affects many other plants. It is remarkably variable in size.

Sp. 8. CURVISTRIGANA, Wilkinson (1859). *curvistrigana,* Wilk., Stainton, Doub. Cat.

Very similar to *angustana,* but sufficiently distinct according to the characters pointed out by Wilkinson; according to Heinemann it differs in the neuration, and is thus placed by him in another section. He writes me that it feeds in the flowers of *Solidago virgaurea;* Rössler also attributes it to that plant, but erroneously refers the name to Haworth, and apparently equally incorrectly gives *flaviscapulana* of Herr.-Schf. as a synonym. According to Heinemann the latter species feeds on *Chenopodium. Curvistrigana* is yet rare and local.

Sp. 9. AMBIGUELLA, Hübner (1801). *ambiguella* (et *-ana),* Hüb., Steph., Doub. Cat., Stainton, Wilk., Heinem., Staud. and Wock.; = *roserana,* Tr., Herr.-Schf.

To my mind there is yet some uncertainty as to whether two species are not here mixed. On the Continent it known to feed on the flower-buds of the vine, but, as Hein mann observes, it is found also in woods. In England it always found under the latter condition, and is very loca Mr. Barrett, who has taken it in some numbers at Hasl mere, has a suspicion that a larva feeding in the berries *Rhamnus frangula*, and of very extraordinary habits, ma pertain here, but he has not yet matured his observation Can it be that the vine-feeder, and the wood-frequenter, for two species? Such is not impossible.

Sp. 10. NANA, Haworth (1812). *nana*, Auct. Brit. = *pumilana* et *pallidana*, Herr.-Schf.; *pumilan* Heinem.; *ambiguana*, Fröl., nec Hüb.

Locally abundant in woods.

Sp. 11. GRISEANA, Haworth (1812). *griseana*, Haw Steph., Wilk., Stainton; = *Manniana*, Fiscl von R., Herr.-Schf., Heinem.; *udana*, Guené teste Doubleday.

Frequents marshy places, and feeds, according to Zell (*teste* Heinemann *in litt.*), in the stems of *Alisma Plantag* amongst which plant I have found it.

Sp. 12. NOTULANA, Zeller (1847). *notulana*, Zeller, Dou Cat., Stainton, Wilk., Heinem.

Occurs locally in marshy places and feeds in the stems *Mentha aquatica*. Somewhat smaller than the last, an distinguished therefrom by its white ground colour.

Sp. 13. VECTISANA, Westwood (1845). *vectisana*, Westw. Wilk.; = *Geyeriana*, Herr.-Schf., Heinem.

Somewhat similar to *griseana*, but very much smaller; i occurs in salt marshes in the Isle of Wight, and no doubt in similar situations elsewhere. In Doubleday's Catalogue it is confused with the next.

Sp. 14. AFFINITANA, Douglas (Zoologist, 1846, p. 1269).
affinitana, Douglas, Wilk.

Belongs to the group of *griseana*, but with a yellow ground colour. Occurs in salt marshes. It is not described in continental works, but Herr Heinemann has bred it since the publication of his work from flowers of *Aster tripolium*, and has sent me bred examples.

Sp. 15. RUPICOLA, Curtis (1834). *rupicola*, Curtis, Stainton, Wilk., Heinem.; = *humidana*, Herr.-Schf.

Occurs amongst *Eupatorium cannabinum*, on which the larva no doubt feeds, probably in the stems. Varies much in the ground colour, those from the fens being much more obscure than others taken on the coast. Is especially liable to deposit verdegris on the pin.

Sp. 16. SUBROSEANA, Haworth (1812). *subroseana*, Haw.; = *phaleratana*, Herr.-Schf., Heinem.

Occurs at Darenth, and other woods, amongst *Solidago virgaurea*, and has been bred, I believe, by Mr. Standish from the flowers of that plant. On the Continent it affects *Chrysocorys linosyris*, a rare British plant. Great confusion exists in our collections respecting this species; the next following generally bears the name, but Haworth's type of his true species exists in the British Museum.

Sp. 17. **Heydeniana**, Herr.-Schf. (1848). *Heydenian*
Herr.-Schf., Heinem.; = *implicitana* (Zeller
Herr.-Schf.; *subroseana*, Wilk.

I long had this species separated from *subroseana* in m collection, and my attention having been lately called to by Mr. Barrett, I sent specimens to Herr Heinemann, wh returned them with the above name. It may possibly b *subroseana*, var. *b*, of Haworth. It frequents heaths, an feeds (according to Heinemann *in litt.*) in the flowers c *Gnaphalium* and *Pyrethrum inodorum*. The costa of th fore-wings is straighter than in *subroseana*, the wings nar rower, the ground colour pale dirty greyish-white withou rosy suffusion, the central fascia narrower, the apical fring shorter, yellowish, and with a distinct dark line at its base the hind wings are pale and distinctly reticulated with grey whereas they are uniformly dark in *subroseana*. In Herrich Schäffer's work the description alone pertains to *Heyd niana*, and not the fig. 369, erroneously referred theret An insect sent as *implicitana* to Mr. Doubleday, by Her Lederer, does not show the reticulated markings of th hind-wings, but is otherwise similar.

Sp. 18. **roseana**, Haworth (1812). *roseana*, Haworth
Auct. Brit.; = *dipsaceana*, Zeller, Herr.-Schf.

A common and well-known species, feeding on the see of *Dipsacus sylvestris*.

Sp. 19. **flaviciliana** (Doubleday), Wilkinson (1859).

Not known to Herr Heinemann. It occurs rarely i chalky places in the south of England, where there is n *Dipsacus*. A most lovely species when in fine conditio and when fresh is suffused with a delicate carmine tint qui different to that of its near ally *roseana*, which tint is beaut fully set off by the bright yellow fringe. As a rule it is the larger species, though I have seen small examples in Mr. Bond's collection.

Centaurea grows commonly where the insect occurs, and it is possible that the larva may feed on the seeds.

Sp. 20. DEGREYANA, n. sp.

> *E. ciliellæ valde affinis, sed alis anticis paullo angustioribus, colore plus rosaceo, ad apicem minus saturatè suffuso, fimbria aurantiaca, minus rufescente, posticis pallidioribus, capite thoraceque pallidioribus mox distinguenda.*

This insect is very closely allied to *ciliella*, and is of about the same size, but seems to be sufficiently distinct. The head and thorax are decidedly paler and clearer white; the anterior wings more elongate and narrower; the dark central fascia much narrower; the ground colour with a rosy tinge, which is wanting in *ciliella*, and generally paler, without much evidence of the fuscous suffusion in the apical portion so conspicuous in that species; the fringes less reddish: the hind-wings decidedly paler.

Taken by the Hon. T. De Grey, M.P., at Thetford, Norfolk (and also at Wicken Fen), in a locality where no species of *Primula* occurs. Examples sent to Herr Heinemann were returned as unknown, if it were not a variety of *ciliella*, which, taking into consideration the differences above noted, and the absence of the food plant of that insect in the locality where they were found, I consider is little likely to be the case, and I have consequently ventured to apply to it the name of its captor.

It is worthy of remark that one of Herrich-Schäffer's three figures of *dipsaceana* (*roseana*) much resembles *Degreyana*.

In this, as in many other genera of *Microlepidoptera*, a interesting question on the range of what have been term phytophagic species is opened up to the philosophical i quirer; a question which cannot in any way influence th specific distinction of forms as they now exist. In the *L pidoptera*, where so much depends upon colour and habit and so little on structure, speculation on this point is em nently legitimate.

Sp. 21. CILIELLA, Hübner (1801). *ciliella*, Hüb., Stau and Wock., Heinem. = *rubellana*, Hüb. (1828 Herr.-Schf.; *ruficiliana*, Haworth et Auc Brit.

A locally abundant species among *Primula veris*, on th seeds of which plant the larva feeds. Varies considerabl in size, and somewhat in intensity of colour, but never as suming the light rosy tint of *Degreyana*.

Sp. 22. ANTHEMIDANA (Curtis), Wilkinson (1859).

Very little is known of this insect, which is said to hav been bred by Curtis from the flowers of *Anthemis cotul* and is probably that referred to by him as *subroseana*, in th Trans. Ent. Soc. Lond., new series, vol. iii., Proc. p. 44. am not aware that Curtis ever published a description und the name *anthemidana*. Mr. Wilkinson's description wa probably made from the typical examples, but as these ar now in Australia, I cannot refer to them. Mr. De Gre has lately bred in some abundance from the flowers o *Erigeron acre*, in Norfolk (and also from Shoreham i Kent), a species which has been referred to *anthemidan* though I am bound to say it does not altogether agre with Wilkinson's description, wanting any rosy tint on th wings, and with the central fascia attaining the costa (which Wilkinson says expressly it should not do), where it is narrowed and very sharply angulated. Further information on the species is much to be desired.

Thus I have endeavoured to bring together the whole of the yet known British species referred to *Eupœcilia* in Doubleday's Catalogue, with additions. It will have been observed that the tendency of this paper is more that of synonymic revision than description, the latter being sufficiently done in Mr. Wilkinson's work. I now leave it for better or worse.

LEWISHAM, *7th Dec.* 1868.

ON SERICICULTURE.

By Alex. Wallace, M.D.

In consequence of the present dearth of silk, owing to t
great prevalence of disease in the silk-producing districts
Europe, other cocoons besides those of *Bombyx Mori* ha
been eagerly sought after in order to supply the deficiency

Twelve years have now elapsed since the first attem
was made at Turin to introduce a new silkworm, *Bomb*
Cynthia, into Europe. Since that time the idea of acclim
tizing new races has spread, not merely over the whole
Europe, but also into her colonies. At the present ti
some dozen or more species of silk-producing *Bombyces* a
undergoing the trial of naturalization in new climes, a
many thousand experimenters are at work in their laudab
efforts to introduce new and profitable industries in vario
parts of the world. In fact, the future aspect of Seri
culture is changed; the production of silk may no longer
considered as limited chiefly to one species and a compar
tively small district. Owing to the facility of rapid con
munication between distant countries, by the agency of stea
transit, the whole tribe of silk producers, many of who
have till lately remained but little noticed in their own r
treats, are now rudely brought to light, dispersed ov
the world, and their habits and customs investigated with
view to the utilization of their produce. Who can fores

what important results may accrue, in Great Britain or Ireland, or in some of her colonies, by the acquisition of a silkworm suited to the climate? On the other hand, could we put ourselves in the place of the poor *Bombyces*,—torn from the calm repose of their native haunts, forced to travel from clime to clime, hearing new languages, handled by queer foreigners, half-starved on unsuitable food, suffering vicissitudes of temperature hitherto unknown,—what quaint narratives might we fancy would be handed down from generation to generation! Have we no Entomological poet whose imagination can depict these woes of the silkworm?

It has been thought desirable that some notice of these experiments should appear in the annual Christmas retrospect offered to the Entomological eye; I have therefore endeavoured, to the best of my ability, to fulfil the pleasing duty.

To M. Guérin-Méneville belongs the honour of having first conceived the idea of, and of carrying out, the naturalization of new silk-producing *Bombyces:* to him, also, we owe the introduction of several races.

Lady Dorothy Nevill was the first in England to appreciate these ideas, and to a certain extent to realize them; others have followed their footsteps, and the Ailanthus silkworm, the first on our list, may now be fairly considered as a denizen, not merely of Great Britain and Europe, but also of America, Australia, the Cape of Good Hope, &c., &c., while its introduction into New Zealand, Tasmania, and other of our colonies, is but a question of time.

In fact, the question of Sericiculture, now so wide spread, demands serious attention; it is rapidly passing out of the domain of experiment into that of commercial enterprise; and, as far as we can judge, another decade will see it firmly established in many new localities.

We may, therefore, fairly inquire what species have been submitted to acclimatization, with what success, and in wh climes?

With regard to *B. Mori:* the European silk farmer finding their own races fail, have, by the advice of M Guérin-Méneville and others, reverted to the old sourc for new stock, under the idea that the present race was wor out. Only, however, from Japan have they been able t procure in any quantity a race whose progeny was able t resist the disease; these also, in the second generatio failed to produce a crop. Hence a great demand has arise for healthy eggs; that is, eggs produced from parents wh have never exhibited any sign of malady. The price of egg has greatly risen, and it has become a question of some importance, whether in England we could not make a goo profit by the sale of English reared eggs of *B. Mori.* I hav had sent to me, for the last two years, eggs of the Japanes varieties of the *B. Mori,* and expect more this winter and I trust some of my readers may be willing to make th experiment with me of trying to cultivate this race with view to the sale of the eggs thus produced.* A lady correspondent writes to me—"This year (1868) I reared fron eggs given me, 1,500 worms of the ordinary kind (*B* *Mori*), and kept them in our greenhouse, feeding them o the leaves of the ordinary English mulberry. The eggs produced by these worms I sold to a gentleman for the Italia market for the sum of 2*l.* 8*s.*, at 6*s.* per oz. I hope (D.V. to keep three or four times the number next season, as I wish to give the money for charitable purposes."†

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* I have hitherto refused to experiment on *B. Mori,* as a silk producer in Great Britain; but as an egg producer the case is quite different, and I think worthy of trial.

† In 1865 the price of Japanese eggs was 15 francs the oz., *i. e.* pe card in France.

The Japanese varieties of the *B. Mori* produce respectively white and green-tinted cocoons; and are therefore termed respectively "white" and "green." The silk is fine and strong. The larvæ are darker-coloured, and have more definite stripes—*vers zébrés,* according to Capt. Hutton—and are more vigorous than the common variety grown in England, producing the large oval yellow cocoon; their cocoon is small, of a pure white or greenish tint, and of the dumb-bell shape; that is, narrower in the centre than at the ends. A friend in Japan writes to me, bearing date June 26, 1868. "By both mails we received a number of Italians, who have come to purchase silkworms' eggs. It is marvellous the growing demand for the Japan eggs and stock. Four summers ago we had about ten of the continentals, and they purchased most of the cards at something under 1*s.* each; but this year it is reckoned that upwards of eighty are coming, and bringing with them credits to the extent of 8,000,000 or 9,000,000 dollars, and a dollar to-day is worth 4*s.* 6½*d.*, and the price of cards will be from 15*s.* to 20*s.* So this must be a good business for the Niphons." August 6th he writes—"I have witnessed the whole process of the tame worm (*B. Mori*), and have been struck by the care and attention shown throughout; and I think it is mainly due to the strict charge taken of them that the Japan seed is in this present year in greater demand for the French and Italian markets. This year it is estimated that over 2,000,000 cards, valuing 12*s.* 6*d.* each, will be exported. Already, in Yokohama, upwards of 1,000,000 have been purchased, and the Italians are still eager for more; and the quantities purchased in the north, at Hakodadi and Ne-e-gata, are not known."

Such is the demand for healthy eggs of *B. Mori.* It seems well worthy of trial to import these Japanese varieties into England, and endeavour to realize from our ow mulberry trees some of these extraordinary profits.[*]

The Ailanthus silkworm, *Bombyx Cynthia*, feeds on th *Ailanthus glandulosa*, a lofty ornamental tree of very quic growth and handsome massive foliage, thriving in ou London squares and parks, and well suited for the adorn ment of parks and promenades in capital cities or countr towns.[†]

This fine tree, a denizen of Central Asia, was in 1751 im ported into Europe, and thence spread to America. It i now acclimatized in all the temperate regions of the worlc and being of quick growth and bearing the knife well, may readily be converted into a bush for the purpose c feeding the silkworms. The cocoon of the Ailanthus mot is a greyish-brown pod, consisting of six or seven layers c fine silken fibre, spun in one thread, but so as to leave a opening at the top for the exit of the moth, and therefor belonging to the class of cocoons termed "*ouverts*," in opposition to the closed cocoons (*fermés*), of which that of *B. Mori* is the type.

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[*] The culture of *B. Mori* has been for some years past pushed both i Australia—especially in the neighbourhood of Sydney, where Messr Asselin and Brady speak very favourably of the results already obtaine and are carrying on the production of cocoons on an extended scale and at the Cape, where, according to the following extract from th Graham's Town Journal, it is likely to prove a great success:—"It satisfactory to find that the specimens of silk sent to the Paris Exh bition have obtained high commendation. Sir B. Philipps, one of th English jurors, had no hesitation in saying that the sample was of a ve fine and valuable description, and that silk was evidently an importa article of production for the Cape. Professor Leoni Levi, commission expressly by the British Government to ascertain the best silk-producin country, has selected the Cape for especial remark."

[†] For the above reasons, and also because in autumn the leaves dro all at the same time, and can readily be cleared away, it would be we suited for the adornment of the new Thames embankment.

These two classes of cocoons require perfectly different treatment in reeling: the closed ones are simply placed in hot water, and, floating readily at the surface, twist round and round therein with a minimum of friction as the thread reels off. The open cocoons so treated would fill with water, and becoming heavy would break the thread. This difficulty has been overcome by French ingenuity. Madme. la Comtesse Corneillan, Dr. Forgemol and others have taken out patents for reeling all kinds of open cocoons—even those of *B. Mori*—after the escape of the moth. These modes have not however yet come into general use.

The silken fibres of the Ailanthus cocoon are matted together with a tough gum, which requires the use of an alkali to dissolve it: the fibre is fine and strong, deficient in gloss, but very smooth and soft. Eight hundred yards are said to have been reeled off in one unbroken thread by the French machines alluded to. Our Australian cousins speak of it thus:

"The Ailant silkworm* is of a very different nature to the well-known Mulberry silkworm; in fact the two have little in common but that part of their names which implies that both produce a commodity, which everyone recognizes as silk by its appearance. The two products are quite distinct articles, are grown in different modes, and prepared by different processes, are manufactured for such various purposes that the two materials may be contrasted as having some such relation to each other as linen has to cotton; and there are especial qualities in Ailantine (the produce of the

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* Vide the Ailant Silkworm, by Charles Brady, Sydney, 1868.

Ailant silkworm) which distinguish it from common silk. Thus, Mulberry silk is more lustrous, but it will not bea washing, and soon frays and wears through the creases while the Ailant silk, cleaned with cold water and soap, improves in lustre and comfort in wear every time it is washe for years, and is much more durable. Ailantine, besides takes no permanent injury from oil or grease, but the fabri made from it must never be boiled or washed in hot water.

"The progress of the silk industry in Australia may probably, in the commencement, be like that of wool. In its early days it was disparaged, and objected that there was no market for wool in the colony. How different is now the case! Let it not be supposed that the production of silk can possibly be overdone. Insatiable markets are ready to take all — even as many millions of pounds as can be produced. It is more easy to overdo the production of wool than of silk; and paradoxical as it may seem, it is yet true that the lower in money value the raw material, the less probability of a glut, the more uniform the return and more profitable to the grower; for, as in the case of cotton, a very small reduction in price of a material largely consumed invariably brings it into request for new purposes. The Ailant culture may be advantageously commenced on the farmsteads of settlers, on sheep stations, on unimproved purchased lands, and particularly on the long bare downs or plains at present so imperfectly utilized. As an adjunct to the growth of wool, the writer has no hesitation in saying that the Ailant may be made to pay the station expenses of every run; in fact, increase the profit to the squatter for wool by *2d.* to *4d.* a pound, and thus, without involving any extra outlay of capital, enlarge the capabilities of the run for general purposes."

Thus much for Australia, where it is gratifying to find so much attention paid to this new industry. This silkworm is very easy to rear, and of great beauty. It thrives best in a temperature of 70°—80° F. on the leaves of the Ailanthus tree, requiring some protection from its numerous enemies, but can readily be fed upon gathered leaves indoors, kept fresh by plunging the cut ends into a vessel containing water. Both it and its food plant thrive best in a warm, sunny spot, in a light dry soil. The following brief directions may prove useful, but for further detail I would refer the reader to my Essay on Ailanthiculture, published in the Transactions of the Entomological Society, series 3, vol. v. part 2; The Ailant Silkworm, by Chas. Brady, Sydney; Mons. Givelet's L'Ailante et son Bombyx, Librairie Agricole, 26 Rue Jacob, Paris; Education des Vers à Soie de l'Ailante, Rapport à S. E. le Ministre de l'Agriculture, and the Rapport à S. M. l'Empereur sur le Ver à Soie de l'Ailante, all by Mons. Guérin-Méneville, Paris.

Directions for Ailanthiculture.

The time to plant the *Ailanthus glandulosa* is from November to March, inclusive: they may be planted in a clump or in rows, each tree being at least one yard apart from the next one, each way.

Mons. Givelet recommends, and I am inclined to agree with him, that they should be planted five feet apart each way, quincunx form. When planted, they should be cut back to three or four eyes, to ensure their making strong shoots.

The seeds should be sown on a clean piece of light land, in April or May.

Eggs of the *Bombyx Cynthia* should be kept in a warm room, exposed to the light and air, but not to the sun's rays, lest they be dried up. They generally hatch out in warm weather the fourteenth morning, about six o'clock. It saves trouble to suspend the eggs, the previous evening, in a muslin bag, to the leaf-stalk of an Ailanthus leaf, folding and pinning a leaflet within the bag. If it is wished t rear the worms on a tree out of doors, the bag and Ailanthus leaf may now both be thrust into a bag of the cheapest black muslin, two feet long and nine inches wide; the mouth of the bag must be fastened up by a string tied round the base of the leaf-stem. The worms will hatch out and feed up therein in safety. To supply fresh food, cut the stalk, untie the string, empty out the dirt, and slip bag and all over another leaf, the first leaf being undermost. At the third change of leaves, the first leaf, stale and withered, may be withdrawn: in oak silk culture, bags twelve to eighteen inches wide may be used, especially with the Turkey oak.

After the third and fourth moults, fewer worms must be kept in each bag.

To feed the worms on Ailanthus leaves away from the tree, the leaf-stalk must be plunged in water, and it will keep fresh for three or four days: on no account give the leaflets to the worms and shut them up in a cage, as is done with the Mulberry worms.

B. Cynthia will feed on other plants, viz., Laburnum, Teazle, Hawthorn, Rose, Burnet, Scorzonera, Salsify, the Castor-oil Plant, Honeysuckle, Plum, &c.; but by no means so well as on the Ailanthus tree.

Mons. Gelot, at a Conférence faite à l'éxposition des Insectes, Aug. 7, 1865, thus speaks of the silk:* "This kind is both very fine and very elastic; less brilliant, it is true, than that of *Pernyi* and *Mylitta*, but I consider that to be due to the method of preparing the cocoons to be reeled: time and experience may correct that fault.

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* Revue de Séricículture, 1865, p. 191.

"A sure and immediate use for this kind of silk will be found in all kinds of twisted and sewing silks. In this branch alone the consumption is almost unlimited. The spinning machines employed in it require a thread regular and strong. Another use will be found in the manufacture of furniture stuffs, foulards, and mixed goods, &c., &c. In the production of Ailanthus silk on a large scale, there lies a fruitful mine of great industrial wealth, to attain which requires perseverance alone."

The great impediment to the culture of this species in Europe on a large scale is the absence of definite information as to the question of price. The producer is able in any warm sunny spot, where the daily temperature averages 65°—70°, and at night does not fall much below 60°, to attain with tolerable certainty a good crop of cocoons out of doors; while indoors a large crop may with more certainty be gathered, but at a greater expense, owing to the labour of feeding them; but he cannot be expected to undergo the serious outlay of planting a large acreage with Ailanthus trees till a certain remunerative price is offered for his cocoons. The silk merchant, on the other hand, says, give me so many thousand cocoons as are necessary to make 100 lbs. of silk, and then I will set a price upon your product. And as to do this would require 100,000 cocoons or more, the question in this country has not yet been solved.

The next species is one closely allied to *Cynthia*, if not a local variety of the same, viz., *Bombyx Ricini*, originally from Bengal. This species or variety, resembling *Cynthia* very much in appearance, though somewhat smaller, has many generations during the year; hence is quite unfitted for temperate climes, where there is no supply of food in th winter months. It has, however, been introduced int tropical countries, where the castor-oil plant, *Ricinus communis*, its food plant, grows into a large shrub or tre bearing foliage all the year round.

In Algeria, Paraguay, Corrientes, Monte Video and simila localities it has been introduced with success. The cocoo resembles much that of *Cynthia*, but is smaller and redder the silk is much the same also in quality and appearance.

Another species, the *Bombyx Hesperus*, from Cayenne feeding on the café du diable, has been classed for its sil with *Cynthia* and *Ricinus*. But a *Bombyx* from Senegal called *Faidherbia Bauhiniæ*, feeding on the jujube tree produces cocoons more easily reeled, and well spoken of fo strength, elasticity and brilliancy.

At Madagascar, a silkworm, probably the *Borocer* *Madagascarensis*, of Boisduval, has been rudely cultivate for years on the stools of the *Cystisus Cajanus*. The silk i said to be strong but wanting in gloss.

A species from Uruguay, in Central America, is reporte to be found in great abundance on a species of *Mimosa* producing a very fine and pure silk; it has been calle *Bombyx Fauvetyi*.

A species was sent to me by Dr. Hooker, from Caraccas Venezuela, feeding on the *Iatropa grossignifolia*. Th cocoons were formed of a large, coarse, yellowish-grey silk too brittle in substance to be of commercial utility.

Cocoons have been sent to me of *Pachypusa effusa* recently discovered in abundance in the neighbourhood o Graham's Town, Cape of Good Hope, feeding on the Mimos thorn. The silk, however, seems to be very inferior.

Another wild silkworm has been reported to me as feedin on the Banian fig-tree, which grows wild in Britis

Kaffraria. The silk is said to wind off freely, and to be finer and more glossy than that of the *Mimosa* worm.

Attempts have been made in Europe to rear *Attacus Atlas*, a native of Central Asia, feeding on the *Berberis Asiatica*, apple, &c., and the Tussur moth, *B. Mylita*, from Northern India, feeding on the *Zizyphus jujubus*, but without success. Unless the food-plant be indigenous, and the climate of the new country resemble that of its native haunts, it is not likely that any attempts to acclimatize a new race can be successful. These conditions are totally wanting in Europe in the case of *A. Atlas*, *B. Mylitta*, and many other denizens of Central Asia.*

Should, however, among our warmer colonies, any attempt be made to introduce these species, M. Gelot thus speaks of the silk of *B. Mylitta*—"The silk of this species is, in my opinion, superior to that of *B. Pernyi*. When the cocoons are properly prepared they wind from one end to the other with the greatest facility; the quantity of silk in each cocoon is enormous. Its brilliancy is also considerable. This kind we should like much to acclimatize, as being highly useful for silk culture."

For other Asiatic silk-producing species, I must refer my readers to a paper on this subject, Trans. Ent. Soc. vol. i. 3rd series, pt. 4, by Mr. F. Moore.

The next on our list, the *Bombyx Yama-Maï*, hitherto only found in Japan, feeding wild in the large oak forests of the northern islands, is, perhaps, the most valuable of all the races experimented upon; and this not merely because of the excellent quality and quantity of the silk, easily reeled from the cocoon, but also because, being a native of a temperate climate and feeding on the oak, there is apparently no limit to its naturalization over a large portion of the globe. Yet the fact that it is not found indigenous elsewhere than in Japan,* and that the attempts hitherto made to introduce the race into Europe have met with but scanty success, clearly indicate no ordinary difficulty in acclimatizing this valuable race.

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* *Antheræa Roylei*, feeding on an evergreen oak from the Himalayas, Northern India, together with other denizens of those more temperate regions, are fair subjects for a trial of acclimatization.

M. Gelot thus speaks of the silk of the *Yama-Maï*:— "It appears to me to hold the next rank to the Mulberry silk. It is, perhaps, a little finer, and not quite so strong, but quite as glossy. It would, I believe, in many cases be used equally with the Mulberry silk, and if we could acclimatize it on a large scale, it might often supply the deficiency of our present crops. The natural green tint would be no impediment to its taking the dye, for it disappears in washing, and becomes white."

This race (introduced into Europe first in 1861, when but one cocoon was reared,) was imported with some difficulty into Holland in 1862, owing to the existence of a law in Japan entailing the penalty of death on any one exporting these precious eggs (which were a royal monopoly). Since that year the race has been preserved and cultivated in Europe with varying success; and though a few individuals have fortunately succeeded in procuring a brood annually, the majority of experiments have failed. The greatest success has been obtained by M. le Baron de Bretton, an extensive landowner in Moravia, who, in 1867, obtained 4,000 cocoons, and exhibited the silk thereby produced at the Paris Exhibition.

In England this species has been reared since 1865, but only in isolated cases. In 1868 I imported a large parcel of eggs from Japan, and distributed them over Great Britain and Ireland, so as to obtain a widely-extended trial. The summer being unusually warm was inimical to a denizen of the cool shady recesses of the Japanese forests. About 240 cocoons were all that, to my knowledge, were spun; however, about 1,000 fertile eggs have been obtained, and as this winter will bring me another batch of eggs from Japan, we will hope that a cooler season in 1869 will afford a more favourable result. It is, however, of far greater importance, in an early stage of the experiment, to find out the causes which operate to produce the peculiar mortality of these larvæ and check their naturalization, than to be able to record, as the French have done, successful results for several years, and then a mortifying failure. And as the disease and its causes can be best studied in bad seasons, I derive consolation from the unfavourable results of last year, as enabling us the better to perceive the chief difficulties which have to be overcome before the acclimatization of this valuable race may be pronounced a success. From my own experience of the last three years, and from the details furnished to me by others, I am led to think that the worm is liable to three kinds of disease.

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* *B. Cynthia*, on the contrary, which has been fairly acclimatized on a wide area, has naturally an extended range, being a denizen of Central Asia, from the Philippine Islands to Persia.

First. In early life, in the first or second age, a small per-centage of worms are apt to turn yellow, and be affected with diarrhœa; they become soft, and die. This form of disease has been described by French writers on silkworms as the jaundice. I believe it to be due entirely to want of vitality, as I have noticed that the smaller, later born and weakly worms are chiefly affected thereby.

Second. In mid-age another malady, caused, I believe, entirely by too high a temperature, attacks the worms. The first indications are that the vivid beautiful green tint becomes dull and opake, the skin tightens at the flexures of the segments; a whitish tint is now observed in patches; sometimes, but rarely, some minute dusky specks are visible at the flexures; the larvæ are flaccid and eat but little. If muscular movement be made, as on the approach of a visitor, the skin cracks, a pale turbid green fluid issues, the worm shrinks, shrivels and decomposes rapidly.

A third form attacks those nearly full grown or about to spin. Minute dusky specks are visible on the whole body; these rapidly increase and coalesce into brown blotches; the beautiful deep-green colour turns into a muddy green-yellow, diarrhœa ensues; the larvæ cease to eat, the claspers retain their grasp, but all muscular power being lost, the body hangs an inert sack, full of decomposing fluids, which burst out at the most convenient spot. In a few brief hours nothing remains of the fine handsome larvæ but a few dry brown skins.

My own opinion is, that shade, moisture and a cool temperature, with very free ventilation, are necessary to the welfare of this creature. In its early life, in May, a temperature of 50°—55° or 60° is desirable; to be increased during June to 65°—75°; but I think a higher temperature endangers the safety of the worm; and this I believe to be the chief reason why it has been reared successfully on the Continent for several seasons, and then suddenly and entirely failed.* For descriptions of the disease and success in rearing the worm, vide Entomologist, Nos. 46, 56, 57, 58, 59; Entomologist's Monthly Mag. No. 54; and my Report on the *Yama-Maï* for 1868, now in the press.

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* It has been thought, by many experimenters, that this species would be more easily reared out of doors on the living tree; but in 1868, owing, I believe, to the excessive drought and heat, all their trials have failed, and all the cocoons obtained were reared in-doors in a free ventilation.

The following directions for rearing the *Bombyx Yama-Maï*-silkworm may be useful:—

"The eggs should be kept, during the winter, in a cool, dry and well-aërated place, where the temperature does not exceed 40°, at most 50° F., till the oak trees are breaking into leaf in the hedges. Eggs have been successfully wintered in a perforated zinc box with double walls, kept in a cool, shaded porch; also outside a north window: and suspended within a dry soda-water bottle, hermetically sealed, and buried in the ground in the shade of a north wall.

"The temperature must be kept under 50° during the warm sunny days of spring, lest the worms hatch out too soon. They will then keep perhaps better out of doors, in a shady spot, where the cool night air helps to retard the worms. The vicinity of mice, birds, beetles, &c. must be avoided. It is well to plant acorns, or force young oaklings, in pots, so as to obtain an earlier foliage, in case the worms hatch out prematurely.

"When the oaks are breaking into leaf, bring the eggs into a temperature of 60°; expose them freely to light and fresh air; wash them well with water to cleanse away the mould and to moisten the shell, so that the young larvæ may escape more readily.

"It is a good plan to place the eggs on a plate covered with a glass funnel. The worms will hatch out from 6 to 8 a.m., and may readily be removed, by means of a stiff sable hair-brush moistened (avoid at all times touching the worms with the finger), on to a well-moistened plate, or slip of glass, whence they may drink up clean water, which is very beneficial to them: they may then be placed on their food, which must be fresh and moist; admit fresh air freely, sunshine makes them wander: avoid the proximity of spiders, tomtits, robins, &c.: temperature if possible 60°: erratic at first, they cease to wander after the first moult.

"The worms are best fed on the living oak-tree, protected by muslin bags, as described in the directions for Ailanthiculture; or on cut boughs, the longer the better up to six feet in length, having the cut ends plunged into water, wet sand or loam: supply fresh boughs every forty-eight hours and keep them in a well-ventilated room, or, better still, out of doors, so as to be exposed to the evening dew; the temperature should not exceed 75°, and range from 60° to 75°: during hot dry weather supply moisture freely in the evening by watering the foliage two or three times a week.

"In changing the worms from stale to fresh food, avoid touching them, but cut off the stale spray or twig containing the worm, and pin it to the fresh food.

"If a bottle of water be used to plunge the oak sprays in, take care to plug the neck so that the worms cannot crawl within and be drowned.

"If it be wished to cover over the worms to prevent their straying, a light wire frame covered with network, canvass or open muslin, should be placed over them, but so as to allow a free ventilation.

"On no account give picked oak leaves to the worms and shut them up in a box or tray, as is done with the Mulberry worms, but supply them with oak sprays kept fresh in water, as directed, and give plenty of pure air.

"Do not give lettuce or any other leaves as food except oak.

"Avoid disturbing the worms while changing their skins: when about to spin up they generally choose the end of the branch as the site of their cocoon. When spinning begins, remove bough and all from the neighbourhood of the other worms.

"The silk may be reeled the same as that of the Mulberry worms. The moth emerges about the end of August."

For instructions in detail, see my Essay on the Oak-feeding Silkworm from Japan, published in the Transactions of the Entom. Soc. 3rd series, vol. v. pt. 5; Dr. Ward's Yama-Maï, by Baillière: and M. Personnat's Ver à Soie du Chêne, Libairie Agricole, Paris, 26 Rue Jacob; also the Silkworm Book, by W. B. Lord, by Horace Cox, 346, Strand.

Antheræa Pernyi, producing a very valuable silk, is an oak feeder, a denizen of the mountainous districts in the neighbourhood of Newchwang, North China, one of the ports recently opened to our commerce. The cold in winter is so severe, that, as in the Baltic, the Gulf of Leotang is frozen up, and all communication interrupted. But one importation of the cocoons of this species into Great Britain has hitherto been made—in 1867. This succeeded so far only as to manifest the probability of acclimatizing the race. Several cocoons were reared of the second generation, but not sufficient to perpetuate the race.

An account of this insect, with a plate, may be found in the "Intellectual Observer," for May, 1867. M. Gelot thus speaks in its favour:—"The silk of this species is remarkably good: fine, strong and lustrous. It nearly equals that of the *Yama-Maï*. The cocoons, when properly prepared, are reeled easily, with but little waste. Its natural yellow-grey tint is no obstacle to the dyer, in proof of which I exhibit seven species of this silk in various colours. The beauty of this silk renders it of great value for acclimatization in our country."

Some of the cocoons imported in 1867 were entrusted to me. The moths emerged at various dates in the spring, copulated readily, and laid large eggs of a chocolate brown, something like those of *Yama-Maï*, but with a thinner shell and more oblong. Both the imago and larvæ resemble much the *Yama-Maï*, but with sufficient differences to make them distinct species. My larvæ fed on the Turkish oak, but only lived to mid-age: black at first, they were afterwards of a light-green colour, spotted with red and yellow, having a curious peculiarity, the long hairs on the tubercles being knobbed like the antennæ of a butterfly. The species of oak on which it feeds in China appear to be known as *Quercus Mongolica*, *Q. obovata* and *Q. serrata*. Judging from the climate of Newchwang, I should consider that this insect might be reared further north even than the *Yama-Maï*, viz., in the North of Scotland, Sweden, Denmark, Canada, &c. But though I am in hopes this year to be able to repeat the experiment of acclimatizing this race, as Lord Stanley has kindly given instruction to H. B. M. Consul at Newchwang to forward cocoons of this species to England, I am very doubtful of obtaining success in the southern and warmer districts of England.

I should be glad to receive any names of correspondents who, living in our northern countries, would like to make the experiment of naturalizing this race.

There remain now only the three American species,—*B. Cecropia*, *Promethea* and *Polyphemus*. Of these the latter alone is an oak feeder; the two former are figured and described in Jardine's Naturalist Library, vol. vii., pp. 132–8. They are polyphagous; but *Cecropia* thrives well upon apple, sallow, plum, currant, hazel, &c.; *Promethea* upon sassafras, wild cherry, spice-wood, bay, &c. The best silk is that produced by *Polyphemus*. It has been for a brief period successfully cultivated by M. Trouvelot, of Massachusetts—vide Journal Soc. Arts, April 14, 1865, Zoologist, p. 9620, 1865—though I understand that latterly the experiment has quite failed. The silk is said to be of good quality and to reel off easily, and 1,500 yards are furnished by a single cocoon.

B. Cecropia, a very handsome insect, produces the largest cocoon, of a strong coarse silk, more suitable for carding than for reeling purposes. The worm is at first black, then yellow and black, but after its third moult assumes a lovely blue-green hue, and when full grown is a fine and very handsome larva, with red and yellow tubercles. It is easily reared, and is likely to prove a favourite with schoolboys, and those who are fond of rearing handsome larvæ. I possess a fair store of cocoons reared on apple last summer.

Lastly, *B. Promethea*, producing a cocoon smaller but exactly similar to that of *B. Cynthia*, is not a likely insect to be introduced into England, as its food plant is not indigenous, and the silk and insect are both inferior to *B. Cynthia* and its product. I may mention a peculiarity of this insect,—that of the few cocoons sent to me, the greater part of them were males; that they flew about in the afternoon from three to five; and that the only pair I had copulated during that period, and the ♀ laid her eggs the same night.

In attempting to introduce and acclimatize new silkworms two points must be observed to attain any chance of success: 1. That the insect experimented upon should be introduced to a climate and temperature similar to that of the country of which it is a native; 2. That its food plant should be indigenous and easily procurable in large quantities. Given these data, we may set about the experiment with a fair hope of success. Other conditions are however necessary in a commercial point of view, viz., that the cocoons should be produced in large quantity, be easily converted into silk, and be of a sufficient value to remunerate amply the sericiculturist, taking an average of good and bad season This third point is a greater stumbling-block than the tw preceding. Many experiments sufficiently solve the fir two points, but are of insufficient magnitude to apply t the third. While it has happened that in attempting t solve the third point first, assuming that the conditions implied by the two first were fulfilled, an experiment on large scale, which at the onset promised well, broke dow utterly.

Unless Government or Royal Societies interpose thei fostering care, it is quite impossible for individual experimenters to risk sufficient capital in solving the third point i this country. And we must fall back upon the system carried out in various parts of France, of collecting, *e masse*, the cocoons produced,—here a few and there a few,—in many farms throughout a large district, till sufficient ar obtained to be submitted to the reeling establishment.

In conclusion, I shall be only too happy if travellers in distant climes, desirous to assist these experiments, will submit to me any specimens of silk-producing insects tha appear likely to prove of commercial value, or will correspond with me as to the chance of introducing new species.

The two following additional notices respecting *Bombyx Yama-Maï* may not be uninteresting. A correspondent, C. Penruddock, Esq., thus writes from Compton Park, Salisbury:—" May 17, 1868. I tried an experiment with the young worms when they were hatching out, i.e., placed some on an oakling out of doors, though under an *arcad* —the temperature being 30° and 43° F. at night. The worms so treated remained stunted in their growth, ate very little, and did not appear happy. Those I kept in my orangery, under a 'Brussels' net' canopy, throve amazingly, and are now, I suppose, in their second moult, being an inch and a-half to five-eighths long. I must tell you, that as soon as they passed their first moult I placed them by themselves on a small tree, in a pot without covering, and then they ate well and never crawled away. The tendency to crawl about seems to possess the little ones only; and, as you justly observe, it requires constant attention to their atmosphere to keep them quiet. The gauze net over them prevented them from getting lost and away, and what is of consequence, their being constantly lifted up with a brush, which repeated process no doubt injures them. I placed an oakling under the net, which touched it with its top leaves, so that the worms could crawl back again to eat, when they found they could not get out. After their first moult the propensity left them.

"The temperature in the orangery with the young worms ranged from 60° to 75°, and only on that one day—the 'hot Sunday'—did it rise to 110°; it is up to 80° and 85° occasionally with the sun shining on the glass, but there is a breeze through the open doors and windows. I have had all out of doors for the last four or five days, as the nights are warmer, and do not render the worms torpid and check their growth, for they *do not eat when they are too cold.*

"At this moment, I have two *large* pots full of young oaklings (second year's growth from acorns) under Brussels' net, with, I suppose, 350 worms on them, and the thermometer is nearly 100° in the sun, but the worms are not crawling about, but feeding quietly. I take care to reduce this temperature to *them,* by keeping the roots of the plants sufficiently moist, and now and then in the extreme heat taking off the covering of Brussels' net and watering it (the covering), so as to allow the warm breeze to pass through the moistened net. In your Essay, one of the French rearers of this worm attributed the death of all his to the leaves being too wet from the over-suction of the water in whi the branches were placed. Next year, if all be well, I w arrange that all shall, if possible, be reared from the co mencement out of doors, and contrive that the very smalle shall not be checked in their growth, by placing a glass-lig over the portion of the house devoted to them. It seems me necessary at present to be prepared with forced oaklin for those which hatch out prematurely; but it is a fact, th the eggs which I had of you last November, and which have wintered in a small perforated zinc box, suspende under an arch with a north aspect, have been the latest come out, and at least two-thirds of them are still u hatched.

"July 11, 1868. I have been waiting to write to you f some weeks past, in hope of being able to give you a goo account of the *Bombyx Yama-Maï;* but, alas! it is wi me as with many others a complete failure. When I wro to you some two months back rejoicing in my success, certainly thought that I had every chance of it; seventy eighty magnificent worms crawling independently about young oaklings, and eating with the greatest gusto eve leaf offered to them; four or five hundred just hatched fro the eggs you sent to me from Japan, and doing well on oa lings in pots. A selection also doing well on boughs ke in jam-pots and bottles full of water; ditto, sent away friends. Loss the first was from a mischievous bird or bir taking *the whole* of my early larvæ, and leaving only tho hatched from the eggs sent from Japan. It is a great di appointment, as I *felt certain* of rearing *them successfull* However, I turned my attention to the remainder, and place them out on oak bushes covered with gauze, and watere them occasionally, using every precaution against insect &c. First indication of disease shown on those reared o branches in-doors, nearly all died off in three days, no particular reason to be given, as all instructions were carefully carried out. If any reason could be found, perhaps they had too moist a leaf, from the branch absorbing the water too quickly; but in three or four days more those on the oak bushes under gauze were attacked in the same way, and perished by dozens. To save the remainder, I removed them a long distance off to some oak bushes netted in, and affording both succulent food and shelter from the sun. No use; they died off continually, hanging in black putrid masses by their hind claspers. I have only, at this moment, two very large ones, each in a separate bag on an oak bough; four diseased ones, and about ten others in a bag on a Turkish oak; these latter not escaping the disease any more than their neighbours."

Another gentleman from Bandon, Co. Cork, writes:—"I received forty-two picked eggs, and subsequently about 100 more inferior; about forty-four hatched out from April 25 to May 20; eight I gave away, four strayed; two met with an accident; fourteen died soon after coming out; eleven died diseased; five spun. They were fed in-doors on the common oak boughs, the ends placed in water, and changed with the water every second day; fresh leaves were always given dry; the temperature was not particularly noticed, but much higher than usual; the room faced west, and was 10ft. long by 9 broad, and 10ft. high; window nearly always open, but protected by gauze lest birds should enter; the door generally open; five cocoons were spun from June 25 —July 17; a great many of the newly-born worms died; many only succeeded in getting their heads out of the shell. I noticed that the worms dislike hot sunshine. I am sure I could have reared many more but for the heat, which has been greater here than for the last twenty years. During one very hot week the worms died rapidly, afterwards a change came and the disease abated; the eleven that died turned yellow; between their second and third moult dark spots appearing at the tail, then at the base of the hairs near the head, then extending down the body; they refused food, and, unable to clasp the twig, ejected a dark fluid and died. The disease appeared simultaneously with the intense heat, which I am sure was the cause of it."

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LEPIDOPTERA.

NOTES ON NEW AND RARE BRITISH LEPIDOPTERA (EXCEPTING TINEINA) IN 1868.

BY H. G. KNAGGS, M.D., F.L.S.

AFTER a summer almost unprecedented for the duration and intensity of its heat, and followed by an exceedingly mild autumn, the British Lepidopterist naturally looks forward to an imposing array of novelties as the result of the year's work. Theoretically, no doubt, the readers of "The Annual" ought to have before them a list far above the average; but practically the additions to the British moth-fauna, since the publication of our last volume, are the following:—

1. *Leucania albipuncta*, S. V. (Ent. Mo. Mag. v. 173).
2. *Plusia ni*, Hübner (Ent. Mo. Mag. v. 107).
3. *Scoparia Zelleri*, Wocke (Ent. Mo. Mag. v. 131).
4. *Crambus myellus*, Hübner (Meeting of Ent. Soc., Dec. 7th, 1868).
5. *Eupœcilia Heydeniana*, H.-S. (Present "Annual").
6. *Eupœcilia Degreyana*, M'L. (Present "Annual").
7. *Pterophorus* (*Oxyptilus*) *lætus*, Zeller? (Present "Annual").

Only seven new British species in such a year! Perhaps there might have been more had not the energies and powe of endurance of many of us been over-taxed by the tropica weather through which we have passed—probably, too, species or two yet remain undetermined.

Glancing at the records of rarities captured during th past season the good old butterfly days appear to be returning; the scarcer species, such as *Pieris Daplidice*, *Vaness Antiopa* and *Argynnis Lathonia*, having put in a muc stronger appearance than usual, while as for *Colias Hyal* I suppose it has never been more abundant. *Lycæna Ario* seems to have started up in new localities, and the "Chalkhill Blue" has actually paid a visit to Hyde Park.

Sphinx convolvuli has been unusually abundant, an some score or so of *Deilephila lineata* have been captured A few *Chærocampa Celerio* have turned up here and there and a *C. nerii* has occurred at St. Leonards.

A sprinkling of *Acronycta alni*, both in the larval an perfect state, have been taken. The occurrence of *Haden peregrina* at Lewes corroborates the non-accidental natur of the two previous captures in 1858 and 1859 respectively Perhaps one of the most interesting occurrences of th season is the re-discovery in Norfolk of the long-lost *Meliana flammea*. *Lamphygma exigua*, at Peckham, is recorded. Several examples of *Polia nigrocincta* have agai rewarded the patient zeal of its discoverer. Collecto evidently do not mean to let *Erastria venustula* becom extinct again for want of looking for it. Half-a-dozen captures of the noble *Catocala fraxini* are recorded. *Sterrh sacraria*, so surprisingly numerous in the previous season seems conspicuous by the occurrence of only a single specimen. Besides these, the following are worthy of note:— another *Agrotera nemoralis* at Guestling; a single *Nasci cilialis* at Wicken Fen; *Phlæodes crenana* at Richmond

Surrey; two fine examples of *Dicrorampha flavidorsana* at Alphington, near Exeter; *Hedya Servillana* and *Eupœcilia curvistrigana* at Haslemere; *Bactra uliginosana* at Wicken Fen; *Sericoris euphorbiana*, which, since the clearing up of its natural history by Professor Zeller in the pages of the Magazine, bids fair to become a common insect; and *Eupœcilia anthemidana* in Norfolk, only there appears to be some doubt whether this be not a species distinct from *anthemidana*.

A good many varieties and aberrations have been recorded in 1868, among which may be mentioned a Manx race (dwarfed) of *Vanessa urticæ* and *Anthocera filipendulæ*, two *Ephyra omicronaria*, minus the omicron; white and yellow-banded *Sesia culiciformis;* a very extraordinary *Setina irrorella*, with a strongly-marked subterminal fascia; a white *Cr. Phlœas;* a cream-coloured *Arctia villica;* a *Caja*, with chocolate fore- and black hind-wings; hermaphrodite *Bombyx quercûs* and *Hipparchia Semele*, *Lycæna Alexis*, &c. &c.

RE COLIAS HYALE.

At page 175 of the Ent. Mo. Mag. Mr. Barrett endeavours to account for the occasional abundance of *C. Hyale* by other causes than migration. He shows pretty conclusively, by contrasting the relative condition of specimens with their respective localities and dates of occurrence, that those taken inland cannot very well be stragglers from the coast. He accounts for the perpetuation of the species, in spite of changes of crops, &c., by the instinct of the ♀ in distributing her eggs widely and sparingly, and he shows, too, that the insect actually emerges, and consequently feeds up, in this country, a fact which is fortified by a comparison with the natural history of its near ally, *C. Edusa;*

regarding which, 1. Mr. C. W. Dale mentions (E. M. M v. p. 77) having found an individual in the larval state feedin on melilot at Charmouth, in October, 1867, which, after dul changing to pupa, died in the act of emerging at the en of March, 1868. 2. At page 114, vol. iv. E. M. M., Mr Buckler relates the fact of Mr. Jeffrey having observed fresh-looking ♀ *Edusa* depositing her eggs (fertile) at th end of August. 3. Mr. Ingram, at page 90 of the sam volume, records a similar occurrence; and further on, a page 211, mentions having found eggs of *Edusa* on Aug 21, which hatched five days after, and from which he ma naged to rear a ♂ imago on the 7th of October.

LYCÆNA ARTAXERXES, Fab., *versus* L. MEDON, Hufnage (AGESTIS, S. V.).

In an able and deeply interesting contribution to the En tomologist's Monthly Magazine (vol. iv. p. 73), Professo Zeller treats of the earlier stages of *Lycæna Medon*, an terminates by indicating a doubt as to the correctness of th generally accepted view that *L. Artaxerxes* and *Medo* pertain to one species. Since then he has had the opportu nity of bringing this suspicion to the test, and is now tole rably well convinced that each must rank as a specie distinct from the other. [See Stet. Ent. Zeit. 1868, pp. 40 405.*]

RE SPHINX CONVOLVULI.

The Reverend John Hellins, assisted by his friend M D'Orville, who has had unusual opportunities of makin careful observations and dissections on a rather extensi scale, has broached a subject of peculiar physiological interest in the pages of the Ent. Mo. Mag. vol. v. p. 160.

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* A translation of this exhaustive paper will appear in the pages the "Entomologist's Monthly Magazine" for January, 1869.

The conclusion arrived at is, that in the case of the female *convolvuli*, unlike *Sphinx ligustri* and the three *Smerinthi*, the eggs are *gradually* developed in the ovaries of the imago. He thoroughly disproves, too, that *convolvuli* ♀ is invariably barren in the autumn, as was previously generally considered to be the case.

RE DASYCAMPA RUBIGINEA.

Some time since, Herr von Hagens made a statement that the larva of this species was in some way connected with ants' nests (*vide* Berliner Ent. Zeit. 1865, p. 112). The Reverend J. Hellins, in his description of the earlier stages of *D. rubiginea*, which will be published in the Entom. Monthly Mag. for January, 1869, shows very clearly that there is no necessary connection between this larva and *Formica fuliginosa*. Herr Weymer reared it from beech leaves (Stett. Ent. Zeit. 1865, p. 113), and it was at the foot of a beech tree that Herr von Hagens' ants' nest occurred; hence it is probable that the presence of the larvæ in that nest was accidental.

CURIOUS FOOD OF ABRAXAS GROSSULARIATA.

Most people were aware that the larva of *A. grossulariata* was partial to sloe, but few could have guessed that it fed upon *Cotyledon umbilicus*, on Ailsa Craig, until Mr. Chapman acquainted us with the fact (E. M. M. vol. iv. p. 42). And further on (p. 182) Mr. Barrett informs us that he noticed a number of these larvæ on *Sedum telephium*, and that too although plenty of blackthorn was handy.

NEW BRITISH SPECIES IN 1868.

LEUCANIA ALBIPUNCTA, S. V.

Leucania albipuncta, S. V., Q. 4; Fab. 342; Hüb. 223 Gn. I. 75.

This close ally of *L. lithargyria*, which makes its ap pearance in July and August in various parts of Europe though actually commoner, than the last named, in France does not appear to be so generally distributed.

Albipuncta is an insect of a smaller cut than *lithargyria* the fore-wings are more ferruginous, the white spot is mor strongly marked, the subterminal line is more visible, bu the series of dots which follow it are much less marked tha in *lithargyria*.

Its ordinal position in our lists will be immediately afte *lithargyria*. This interesting *Leucania*, which *ought* t have turned up in England long ago, was exhibited as species new to our lists on the 2nd of November last, at th Entomological Society of London, by Mr. T. H. Briggs, o St. John's College, Oxford, but was first identified in th "Entomologist's Monthly Magazine" (vol. v. p. 173). Mr Briggs took one specimen at sugar at Folkestone on th 15th of August last; his brother captured a second earl in October in the same locality, and they saw what the believed to be another specimen, but failed to secure it.

PLUSIA NI, Hübner.

Plusia ni, Hüb. 284; Engr. 595 a, b, c (*l'Ajoutée*); Tr v. 3, 189; Dup. vii. 137; Freyer, 23—1; Gn. ii. 349.

This *Plusia*, though rather scarce, has a wide distribution for it is recorded as occurring not only in several Europea localities, but also in both North and South America. It flies in June and August. M. Guenée remarks, that Donovan's figure (pl. 453, f. 1) of *aurosignata*, which is said to represent *interrogationis*, very much resembles it.

Superficially it is not very unlike our common *P. gamma*, for a variety of which it would be very apt to be passed over by an inexperienced eye. It has also many points of resemblance to *interrogationis*. As, however, it is far more likely to be confounded with *gamma* than any other species with which I am acquainted, I have offered a few notes (E. M. M. v. p. 127), which I hope will enable anyone so fortunate as to capture the species to separate it readily from that "Aurelian's pest."

Less in size than *gamma;* the less acute fore-wings, though lacking the burnished lustre of *gamma*, are far more rich in their depth of tone, contrast of shading, cheerfulness of tint and distinctness of markings. The hieroglyphic more usually, but not constantly, resembles that of *V. aureum*, but the peculiar character of the last segments of the abdomen of the ♂, fringed with tufts of ochreous scales which terminate in an ochreous patch underneath the anal segments, should afford conclusive evidence of its distinctness.

For this handsome addition to our *Plusidæ* we are indebted to Mr. D'Orville, of Alphington, near Exeter, so well known as an ardent Lepidopterist, who at page 128 of the Entomologist's Monthly Magazine, vol. v., records the interesting fact of his having secured an example (♂) in his garden at flowers of red Valerian, on the 13th of August last. That gentleman notes that the flight of *ni* is less like that of *gamma* than of *festucæ*.

Its ordinal position will be between *Plusia gamma* and *P. interrogationis*.

SCOPARIA ZELLERI, Wocke.

Scoparia Zelleri, Wocke, Vaterl. Ber., 1854.

S. Zelleri is most nearly allied to *S. ambigualis*, but it considerably larger than that species. It is also broader the fore-wing, the apical margin of which is a trifle mo vertical; the whitish-ground colour stands out more co spicuously on either side of the central fascia; the apic aspect of the central fascia (*i.e.* the second line) is mo deeply crenated than in *ambigualis*. Mr. Horton's examp exceeds in alar expanse the largest *cembræ* with which have yet met.

Two specimens have at present been detected—one tak by Mr. H. Pryer, at Norwood, on the 17th August, 186 the other by the Rev. E. Horton, in Dr. Hearder's dinin room at Carmarthen, in July last.

CRAMBUS MYELLUS, Hübner.

Crambus myellus, Hüb. 37; H.-S. p. 64; *Chilo conchellu* Tr. et Dup.; *Tinea pinetella*, Scop. Fn. 224; *Hercyniæ*, Heinemann.

This species is very much indeed like *Cr. pinetellus*; b whereas in the latter the pearly vitta is only cut up into tw parts, in the former it is divided into three, the last of whi is a linear portion, which is parallel with the apical margi

Myellus inhabits the mountains of Central Europe. has also occurred in Livonia, Finland and Lapland.

Mr. Edward Saunders informs us that we are indebted Mr. N. E Brown (curator to Mr. W. W. Saunders) f this pretty addition to our *Crambidæ*. He captured a sing example sitting on a blade of grass on a wet afternoon July, near Aberdeen. It was exhibited by Mr. E. Saunde at the meeting of the Entomological Society on the 7th December. Since then, among his set of *pinetellus*, Mr. W. C. Boyd has detected a second specimen, which was captured by his cousin some years ago, he believes, in Scotland.

EUPŒCILIA HEYDENIANA, H.-S.

This insect is in most of our collections confused with the true *subroseana* of Haworth, or representing that species, which is the rarer of the two. *Vide* Mr. McLachlan's paper on *Eupœciliæ, ante*, p. 90.

EUPŒCILIA DEGREYANA, McLachlan.

This handsome *Eupœcilia*, captured by the Hon. T. De Grey, M.P., in Norfolk, and at Wicken Fen, is intermediate between *roseana* and *ciliella* (*ruficiliana*, Haw.), but with the form of the latter. A description will be found in this volume, *ante*, p. 91.

PTEROPHORUS (OXYPTILUS) LÆTUS, Zeller?

Oxyptilus lætus, Zell. Isis, 1847, 903; L. E. vi.; Stgr. 2605.

In both sexes fore-wings pale ochreous, apical parts of fore-wings indistinctly double-streaked with whitish; the hind part of third digit of the hind-wing with a few black scales *some distance* before the apex.

Now in *pilosellæ*, which, of our British species, *lætus* most nearly resembles, the third digit of the hind-wing is black-scaled on both sides, *only a little* before the apex. In fact, until now, we have possessed no plume with the tuft of black scales disposed as in *lætus*.

N.B. Professor Zeller divides his genus *Oxyptilus* into two sections, by the character presented by the disposition of the black scales.

To the Hon. Thomas de Grey, M.P., we are still further indebted for this singularly interesting addition to our *Pter phorina.* Mr. de Grey was fortunate enough to captu two examples in Norfolk, near Thetford, last July.

I bring this insect forward as *lætus* with some slight hesi tation, because, though the specimens agree well with type from Professor Zeller, in my friend Mr. Stainton's collec tion, and also with one sent to me some year or two ago b Dr. Staudinger; the latter gentleman, to whom I hav submitted one of the plumes in question, writes me that i seems to him to be rather "*distans* than *lætus*," but add *distans* and *lætus* approach one another so closely, that ver probably they form but one species. At any rate, Mr. D Grey's plume is a grand addition to the British list.

A Table of Scarce and Local British Lepidoptera for 1868.

(Arrangement that of "Stainton's Manual.")

N.B.—*When the numeral succeeding the initials E. M. M. exceeds* 180, *it refers to Vol. IV., when it falls short of that No. to Vol. V. of the "Entomologist's Monthly Magazine." The fourth volume only of the "Entomologist" is referred to.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Colias Edusa (var. Helice)	Margate	H. R. Cox	August	In litt.	One specimen.
” ”	Wallasey	W. Sello	Aug. 10	E. L. R. in litt.	No typical *Edusa* seen.
” Hyale	"Everywhere"	"Everybody"	August, &c.	Too numerous	Generally abundant.
Pieris Daplidice	Margate	Mrs. Cox	Aug. 5	E. M. M. 105	A ♀ example.
” ”	Margate	A. Cottam	July 27	E. M. M. 106	A fine ♀.
” ”	Dover	W. J. Sterland	Aug. 11	Entom. 131	♀ in good condition.
Limenitis Sibylla	Colchester	W. H. Harwood	July	In litt.	About thirty specimens.
Apatura Iris	Haslemere	C. G. Barrett	July	In litt.	Settling on tall bushes.
Vanessa Antiopa	Near Norwich	F. Norgate	Sept. 3	Entom. 147	Two at Sparnham.
” ”	Tadcaster	F. G. Miller	Oct. 2	Entom. 162	
” ”	Chatteris	J. Fryer	August 6	Entom. 147	Hovering over a flower bed.
” ”	Ipswich	R. W. Ranson	...	Entom. 162	
” ”	Grundisburgh	"A child"	Sept. 1	Entom. 147	Settled on a hedge.
” ”	Near Cambridge	... ...	Last Autumn	L.C.in E.M.M.282	Taken in a garden.
” ”	Near Cambridge	... ...	Last Autumn	L. C. in Ent. 92	Five specimens in a garden.
Argynnis Lathonia	Folkestone	W. Purdey	Sept. 7	E. M. M. 130	A large ♀.
” ”	Margate	A. G. Boyd	Sept. 7	E. M. M. 147	
” ”	Margate	A. Cottam	July 27	E. M. M. 106	On a spray of lucerne.
” ”	Margate	Rev. G. Lewis	Sept.	A.G.inE.M.M.171	Two specimens.
” ”	Ramsgate	W. G. Armstrong	August 7	E. M. M. 106	
” ”	Canterbury	G. Parry	Aug. & Sept.	Entom. 160	Thirteen specimens.
” ”	Colchester	W. H. Harwood	Aug. 15	E. M. M. 106	On lucerne.
” ”	Stowmarket	W. Baker	...	Norwich Mercury	
” ”	Southend	... ...	...	Entom. 160	Comcated. by J. R., 5 specimns.
” ”	Gravesend	D. T. Button	Sept. 2	Entom. 146	

Scarce and Local British Lepidoptera for 1868—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Argynnis Lathonia	Walmer	— Smith	...	Entom. 161	Communicated by F. O. S.
„ „	Near Hazlewood	N. F. Hele	August 3	The "Field."	Another in Aldeburgh.
„ „	Scarboro'	C. C. Smith	Sept. 26	Entom. 161	
„ „	Darenth	E. Harper, jun.	Aug. 16	Entom. 131	
„ „	Ipswich	"A lad"	...	G. G. in Ent. 131	In a clover field.
„ „	Colchester	W. H. Harwood	Sept. 2	In litt.	Second specimen.
Melitæa Athalia	Colchester	W. H. Harwood	June	In litt.	Not uncommon.
Thecla betulæ	Monks Wood	W. Jagger	...	In litt.	
„ „	Worcester	A. Edmunds	July 11—27	In litt.	Twenty-two bred.
„ pruni	Monks Wood	W. Jagger	...	In litt.	Larvæ and imagos.
„ W-album	Gloucester	J. Merrin	May	In litt.	Larvæ on wytch elm.
Lycæna Arion	Painswick Hill	C. J. Watkins	June 23	Entom. 121	Twelve, by searching.
„ „	Gloucester	J. Merrin	June 5	In litt.	
„ „	Cheltenham	E. Demski	July 1	E. M. M. 78	New locality.
„ Corydon	Hornsey Wood	W. Weston	July 15	In litt.	Strange locality.
„ „	Hyde Park	W. G. Armstrong	July 30	E. M. M. 106	Strange locality.
„ Artaxerxes	Near Balmuto	J. B. Syme	June (e.)	Entom. 116	New locality.
Steropes Paniscus	Monks Wood	W. Jagger	...	In litt.	
Procris Geryon	Gloucester	J. Merrin	June	In litt.	
„ „	Lewes	H. A. Jenner	June	In litt.	
Acherontia Atropos	Colchester	W. H. Harwood	Sept.	In litt.	Larvæ, two dark vars.
Sphinx convolvuli	Ross-shire	Dr. B. White	Sept.	In litt.	
„ „	Kildare	J. Douglas	Sept.	E. M. M. 162	Five specimens over petunias.
„ „	Leominster	Dr. B. Gill	Sept.	In litt.	
„ „	Haslemere	— Chandler	Sept.	C. G. B. in litt.	At honeysuckle flowers.
„ „	Folkestone	H. Ullyett	Sept.	E. M. M. 171	
„ „	Gloucester	J. Merrin	Sept.	In litt.	
„ „	Guestling	Rev. E. N. Bloomfield	Aug. 6	E. M. M. 106	And numerous other records.
„ „	Alloa, N. B.	R. Borthwick	Oct. 5	E. M. M. 162	Another at Stirling on the 1st.
Deilephila galii	Deal	H. J. Harding	...	Entom. 118	One specimen.
„ lineata	Near Cuckfield	F. Merrifield	Aug. 9	E. M. M. 107	Flew a few yards.
„ „	Marlboro'	'A child"	Aug. 26	E. M. M. 128	
„ „	Isle of Wight	F. H. Moberley	Aug. 11	E. M. M. 180	Two over geranium.

Deilephila lineata	Near Derby	F. Balgny	Aug. 2	H. E. in E. M. 105	New to locality.
„ „	Cheshunt	W. C. Boyd	Aug. 25	E. M. M. 167	
„ „	Dunbar	D. Pearson	Aug. 10	E. M. M. 172	Two more heard of.
„ „	Kildare	J. Douglas	Aug. 15	E. M. M. 105	Another on 16th, E. M. M. 162.
„ „	Guestling	Rev. E. N. Bloomfield	Aug. 6	E. M. M. 106	Over geranium, day-break.
„ „	Torquay	Rev. C. Grinstead	July 19	E. M. M. 104	Hovering over geranium.
„ „	Lewes	"A boy"	Sept.	J. S. & A. J. in litt.	One specimen.
„ „	Middleton	J. Taylor	Aug. 9	J. T. in Ent. 132	Exhibited alive.
„ „	Yorkshire	J. Binns	July 23	Entom. 132	On a mill wall.
„ „	Truro	A. P. Nix	Aug. 2	Entom. 132	In a garden.
„ „	Isle of Wight	J. C. Clarke	Aug. (m.)	Entom. 149	Two over geraniums.
„ „	Weybridge	R. Barton	Aug. 1	Entom. 149	At St. George's Hill.
„ „	Plymouth	...	May (b.)	J. G. in Ent. 94	Eggs obtained year before.
„ „	Wolsingham	W. Backhouse	Aug. 14	Entom. 133	At geraniums.
Chœrocampa celerio	Birmingham	"A boy"	Oct. 2	F. E. in E. M. M. 173	Flew to light.
„ „	York	"A woman"	Oct. 2	W. P. in E. M. M. 173	On a window-blind.
„ „	Camberwell	— Standish	Oct. 2	Entom. 163	On a fence.
„ „	Huddersfield	"A woman"	Sept. 26	E. M. M. 150	In the town.
„ „	Brighton	— Swaysland	Sept. 21	Ent. Soc. 2 Nov.	
„ nerii	St. Leonards	"A gardener"	October	F. S. E. M. M. 172	On an oleander plant.
„ „	St. Leonards	Mrs. Wood	October	Entom. 162	In the garden at North Lodge
„ porcellus	St. Ives	W. Jagger	...	In litt.	At honeysuckle.
„ „	Worcester	A. Edmunds	June 15—5	In litt.	Nine at flowers.
Macroglossa fuciformis	Gloucester	J. Merrin	June	In litt.	
„ „	Colchester	W. H. Harwood	July	In litt.	Larvæ not uncommon.
„ bombyliformis	Gloucester	J. Merrin	June	In litt.	
Sesia chrysidiformis	Folkestone	Hon. T. de Grey	June 13—15	E. M. M. 104	
„ „	Folkestone	H. Vaughan	Sept.	In litt.	Larvæ in roots of dock.
„ sphegiformis	Staffordshire	J. Chappell	June	E. M. M. 48	Resting on alders, &c.
„ philanthiformis	Howth	J. B. Hodgkinson	June	In litt.	
„ „	Isle of Man	E. Birchall	June (b.)	Entom. 109	Larvæ common.
„ formicæformis	Gloucester	J. Merrin	June	In litt.	
Phragmatœcia arundinis	Wicken F.	Hon. T. de Grey	June 27	E. M. M. 104	
Dicranura furcula	Colchester	W. H. Harwood	...	In litt.	Bred.
„ „	Perthshire	Dr. B. White	April	In litt.	Bred from Rannoch larvæ.
„ bifida	Greenwich	W. West	Aug. 6	Entom. 131	In pupa only seventeen days.

Scarce and Local British Lepidoptera for 1868—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Dicranura bifida	St. Ives	W. Jagger	...	In litt.	Bred.
Stauropus fagi	Horsford	H. Starling	June 1	Entom. 150	On trunk of elm.
„ „	Loughton	W. Machin	...	Entom. 126	Larvæ on oak.
„ „	Leith Hill	F. O. Standish	May 31	Entom. 99	Another by Mr. Dow.
Drymonia dodonæa	Colchester	W. H. Harwood	...	In litt.	Bred several from pupæ dug.
„ „	Mickleham	W. Machin	Sept.	Entom. 126	Larvæ beaten.
„ chaonia	Colchester	W. H. Harwood	...	In litt.	Bred several
Leiocampa dictæoides	Ross-shire	Dr. B. White	Aug.	In litt.	Larvæ scarce.
„ „	Mickleham	W. Machin	...	Entom. 154	Larvæ beaten from birch.
„ „	Colchester	W. H. Harwood	...	In litt.	At light.
Notodonta cucullina	Colchester	W. H. Harwood	...	In litt.	Bred from pupa dug.
Peridea trepida	Darenth	F. O. Standish	May 9	Entom. 99	On stem of young oak.
„ „	Haslemere	C. G. Barrett	May	In litt.	
„ „	Colchester	W. H. Harwood	...	In litt.	Larvæ, pupæ, and imagos.
Clostera curtula	Colchester	W. H. Harwood	...	In litt.	Bred a fine series.
„ reclusa	Ross-shire	Dr. B. White	Aug.	In litt.	Larvæ not very common.
Psilura monacha	Epping	P. B. Smith	July 28	In litt.	1 ♂, 2 ♀.
Lithosia aureola	Headley Lane	Dr. B. Gill	July	In litt.	Scarce.
„ „	Colchester	W. H. Harwood	...	In litt.	Scarce this season.
„ helveola	Box Hill	W. Machin	June (?)	Entom. 121	Bred from larvæ on yew.
„ „	Box Hill	P. C. Wormald	July 18	In litt.	Thirty beaten from yew.
„ „	Headley Lane	Dr. B. Gill	July	In litt.	Several specimens.
Lithosia caniola	Howth	J. B. Hodgkinson	June	In litt.	In the larval state.
„ „	Howth	E. Birchall	June	In litt.	Larvæ.
„ complana	Shirley	H. Vaughan	July	In litt.	Common.
„ „	Howth	E. Birchall	June (m.)	Ent. 97	
„ „	Folkestone	P. C. Wormald	July 5	In litt.	One specimen.
„ „	Shirley	P. B. Smith	July 8	In litt.	
„ pygmæola	Deal	H. J. Harding	...	Ent. 118.	On the sand hills.
„ quadra	Woolmer F.	C. G. Barrett	July	In litt.	Beaten from oak and fir.
„ mesomella	Gloucester	— Marsden	June	J. M. in litt.	
„ „	Stockton	W. Prest	July	In litt.	
„ „	Worcester	A. Edmunds	May (c)	In litt.	
Nudaria senex	Near York	T. J. Carrington	July 2	In litt.	Also by W. Prest.

Clisiocampa castrensis	Gravesend	D. T. Button	...	Ent. 129	Attracted by lamp.
Endromis versicolora	Altyre Woods	G. Norman	April 5	In litt.	Very frequent.
Drepana hamula	Colchester	W. H. Harwood	...	In litt.	Two at light: also larvæ.
" "	Epping	P. B. Smith	July 28	In litt.	
" "	Croydon	H. Vaughan	July	In litt.	Several ♀s, ova obtained.
" unguicula	Gloucester	J. Merrin	April	In litt.	Also in May and August.
Psyche opacella	Witherslack	J. B. Hodgkinson	June	In litt.	New locality.
" crassiorella	Hornsey	F. L. Keays	...	Ent. Soc. 1 Jun.	
Limacodes testudo	Colchester	W. H. Harwood	...	In litt.	Captured and bred.
Cymatophora fluctuosa	Near Gravesend	H. Vaughan	May	In litt.	Bred.
" or	Perthshire	Dr. B. White	April	In litt.	Bred from Rannoch larvæ.
" "	Colchester	W. H. Harwood	July & Aug	In litt.	Larvæ common, but ichd.
" ocularis	Colchester	W. H. Harwood	August?	E. M. M. 131	A dozen pupæ dug.
" "	Worcester	A. Edmunds	May 8—20	In litt.	Twelve bred.
" ridens	Colchester	W. H. Harwood	...	In litt.	Fifteen larvæ.
Diphthera Orion	Colchester	W. H. Harwood	...	In litt.	Larvæ and imagos taken.
Acronycta tridens	York	T. J. Carrington	June 24	In litt.	At sugar.
" leporina	Newlay	E. Birchall	June	In litt.	
" "	Ross-shire	Dr. B. White	June	In litt.	At rest. Larvæ in August.
" "	Shetlands	T. Blackburn	June (b.)	E. M. M. 102	On tree trunks.
" "	Staffordshire	J. Chappell	May 25	E. M. M. 48	Recently emerged.
" "	Altyre W.	G. Norman	May 25	In litt.	At rest on birch.
" "	York	T. J. Carrington	June 11	In litt.	At sugar.
" "	Witherslack	J. B. Hodgkinson	May	In litt.	
" "	Sherwood F.	G. T. Porritt	Sept. (e.)	Ent. 33	Larvæ beaten from birch.
" megacephala	Ross-shire	T. Blackburn	June (b.)	E. M. M. 102	New locality.
" alni	Woolmer F.	C. G. Barrett	...	In litt.	Larva stung by a *Musca*.
" "	Cuckfield	...	Aug. (b.)	F. M. in E. M. M. 107	Larva found in a wood.
" "	Manchester	J. Leigh	June (m.)	E. M. M. 105	Bred from pupa found.
" "	Near Wolverhampton	W. A. Shoolbred	July 28	Ent. 136	On decayed alder trunk.
" "	Great Malvern	W. Edwards	July 4	Ent. 147	One at sugar.
" "	...	Rev. O. P. Cambridge	May 2	Ent. 94	Larva on oak: Aug. '67.
" "	Culford	Rev. A. H. Wratislau	...	Ent. 119	
" myricæ	Ross-shire	Dr. B. White	July	In litt.	At sugar.
" "	Forres	G. Norman	June 16	In litt.	At rest on a wall.
Leucania obsoleta	Gravesend	D. T. Button	...	Ent. 129	

Scarce and Local British Lepidoptera for 1868—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Lucania pudorina	York	T. J. Carrington	June 24	In litt.	At sugar.
Leucania straminea	Gravesend	D. T. Button	...	Entom. 129	
Meliana flammea	Norfolk	Hon. T. de Grey	May 15	E. M. M. 104	
Tapinostola Bondii	Folkestone	Hon. T. de Grey	June 13—15	E. M. M. 104	
„ „	Folkestone	P. C. Wormald	July	In litt.	
Xylophasia scolopacina	Bishops W.	P. B. Smith	July 14	In litt.	At Hampstead.
Dipterygia pinastri	Colchester	W. H. Harwood	June	In litt.	Not scarce at sugar.
„ „	Hampstead	P. C. Wormald	June 11	In litt.	One at sugar.
Xylomyges conspicillaris	Gloucester	J. Merrin	April 1	Entom. 78	Found in breeding cage.
„ „	Worcester	A. Edmunds	April 4	E. M. M. 24	Bred from pupa dug.
Aporophila australis	Lewes	J. H. A. Jenner	Sept. (b.)	In litt.	Rather common.
Laphygma exigua	Near Peckham	J. P. Barret	Aug. 26	Entom. 150	At light.
Luperina cespitis	Colchester	W. H. Harwood	Sept. (b.)	In litt.	Specimen just emerging.
„ „	Lewes	J. H. A. Jenner	Sept. (b.)	In litt.	3 or 4 specimens.
Mamestra abjecta	Gravesend	D. T. Button	...	Entom. 129	
„ albicolon	Wallasey	E. L. Ragonot	July	In litt.	Common.
„ furva	Howth	J. B. Hodgkinson	June	In litt.	
„ „	Llangollen	P. C. Wormald	July 11—15	In litt.	Frequent at sugar.
„ „	Towyn	E. L. Ragonot	July	In litt.	Two at ragwort.
„ „	Kent or Essex	D. T. Button	June (e.)	Entom. 114	
Apamea unanimis	York	T. J. Carrington	June 24	In litt.	At sugar.
Caradrina alsines	Haslemere	C. G. Barrett	June	In litt.	At sugar.
Agrotis saucia	Wallasey	E. L. Ragonot	Sept.	In litt.	Several at sugar.
„ cinerea	Folkestone	H. G. Knaggs	June	E. M. M. 78	A ♀, new locality.
„ aquilina	Wallasey	E. L. Ragonot	August	In litt.	Several also at Crosby.
„ „	York	T. J. Carrington	July 18	In litt.	At sugar.
„ obelisca	Howth	J. B. Hodgkinson	June	In litt.	Larvæ taken.
„ agathina	Forres	G. Norman	Aug. 14	In litt.	Flying over heather.
„ „	York	W. Prest	August	In litt.	At heather bloom.
„ „	Carlisle	J. B. Hodgkinson	August	In litt.	Bred.
„ præcox	Wallasey	E. L. Ragonot	...	In litt.	
„ „	Forres	G. Norman	Aug. 7	In litt.	At rest.
„ pyrophila	Forres	G. Norman	July 1	In litt.	At rest.
„ lucernea	Llangollen	P. C. Wormald	July 12—15	In litt.	About a dozen at sugar.

Agrotis Ashworthii	Llangollen	P. C. Wormald	July 14	In litt.	Two specimens at sugar.
Triphæna subsequa	Forres	G. Norman	July 31	In litt.	Not uncommon at sugar.
Noctua depuncta	Forres	G. Norman	July 24	In litt.	Not unfrequent at sugar.
„ ditrapezium	Haslemere	C. G. Barrett	June	In litt.	At sugar.
„ rhomboidea	W. Wickham	P. C. Wormald	Aug. 21	In litt.	At sugar.
„ conflua	Ross-shire	Dr. B. White	July	In litt.	Scarce.
„ Dahlii	Ross-shire	Dr. B. White	August	In litt.	Flying over heather.
„ neglecta	Forres	G. Norman	July 26	In litt.	At sugared rags on heather.
„ „	Ross-shire	Dr. B. White	August	In litt.	At sugar, and over heather.
Tæniocampa leucographa	Haslemere	C. G. Barrett	April	In litt.	At sallow bloom.
„ „	Leith Hill	T. Eedle	Spring	E. M. M. 49	
„ „	Croydon	H. Vaughan	March	In litt.	At sallows.
„ opima	Wallasey	E. L. Ragonot	April	In litt.	Not scarce at dwarf sallows.
„ miniosa	Haslemere	W. H. Harwood	May	In litt.	Larvæ beaten from oak.
„ „	Colchester	C. G. Barrett	April	In litt.	At sallows.
„ „	Leith Hill	T. Eedle	Spring	E. M. M. 49	
Orthosia suspecta	Ross-shire	Dr. B. White	August	In litt.	Scarce.
„ „	York	W. Prest	July	In litt.	At sugar. Also by T. J. Carrington.
„ „	Newlay	E. Birchall	June	In litt.	
„ „	W. Wickham	C. T. Crutwell	July 15	E. M. M. 150	Two at sugar.
Hoporina croceago	Haslemere	C. G. Barrett	April	In litt.	At sallows.
Xanthia citrago	Colchester	W. H. Harwood		In litt.	Larvæ common.
„ „	Croydon	H. Vaughan	August	In litt.	Bred from larvæ on lime.
„ gilvago	Near Liverpool	W. Sello	Sept. 12	Entom. 155	One at sugar.
„ aurago	Worcester	A. Edmunds	Sept. 19	In litt.	One at sugar.
Cirrhœdia xerampelina	St. Ives	W. Jagger		In litt.	Off gas lamps.
„ „	Gloucester	J. Merrin	August	In litt.	
„ „	Colchester	W. H. Harwood		In litt.	Bred from pupæ dug.
„ „	Bidston	E. L. Ragonot	Aug. 25	In litt.	Three specimens.
„ „	York	T. J. Carrington	Aug. 21	In litt.	A fine series bred.
„ „	Doncaster	W. Clark	Aug. 17	Entom. 132	At sugar.
„ „	Near Penrith	W. Weston	Aug. 16	In litt.	Amongst ash.
Tethea subtusa	Wallasey	E. L. Ragonot	July 15	In litt.	Two specimens.
„ „	Gloucester	J. Merrin	July	In litt.	
„ „	Colchester	W. H. Harwood	May	In litt.	Larvæ on poplar.
Euperia fulvago	Ross-shire	Dr. B. White	July (e.)	E. M. M. 131	At heather and sugar.
„ „	Forres	G. Norman	Aug. 8	In litt.	Not uncommon at sugar.
„ „	Sherwood F.	G. T. Porritt	Sept. (e.)	Entom. 33	A dozen at sugar.

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Cosmia pyralina	Great Glenham	Rev. E. N. Bloomfield	...	E. M. M. 28	Bred from pupa found.
Dianthœcia capsophila	Howth	J. B. Hodgkinson	June	In litt.	
" "	Isle of Man	H. Vaughan	May	In litt.	Bred.
" "	Isle of Man	E. Birchall	June (b.)	Entom. 110	
" "	Howth	E. Birchall	June (m.)	Entom. 97	
" Barrettii	Howth	W. F. Kirby	June (m.)	E. B. Entom. 97	
" "	Howth	J. B. Hodgkinson	June	In litt.	
" "	Howth	E. Birchall	June (b)	W.F.K.E.M.M.47	
" conspersa	Howth	W. F. Kirby	June (b.)	E. M. M. 47	Interest of locality, &c.
" "	Isle of Man	E. Birchall	June (b.)	Entom. 110	
" "	Ireland	Mrs. F. Battersby	...	Entom. 136	A dark specimen.
" cæsia	Isle of Man	D. Baxendale	June (b.)	E. M. M. 47	Also by E. Birchall.
Polia nigro-cincta	Isle of Man	N. Greening	June 19	E. M. M. 77	Larvæ taken. Also Entom. 99.
Dasypolia templi	Scarboro'	T. J. Carrington	Sept. 3—5	In litt.	Bred from larvæ found.
" "	Near Huddersfield	G. T. Porritt	...	Entom. 33	Scarce in stone quarries.
Epunda nigra	Ross-shire	Dr. B. White	Sept.	In litt.	At sugar.
" "	Forres	G. Norman	Aug. 12	In litt.	Abundant at sugar.
" lichenea	Wallasey	E. L. Ragonot	April	In litt.	Larvæ pretty common.
Phlogophora empyrea	Lewes	J. H. A. Jenner	Oct. 8—13	In litt.	A few in good condition.
Aplecta occulta	Ross-shire	Dr. B. White	June	In litt.	At sugar.
" "	Forres	G. Norman	Aug. 15	In litt.	At sugar.
" tincta	Ross-shire	Dr. B. White	June	In litt.	At sugar.
Hadena glauca	Perthshire	Dr. B. White	April	In litt.	Bred from Rannoch pupæ.
" peregrina	Lewes	"A school child"	Sept.	E. M. M. 150	Recorded by Miss M. Meek.
" contigua	Ross-shire	Dr. B. White	June	In litt.	At sugar.
" W-latinum	Colchester	W. H. Harwood	...	In litt.	Taken and bred.
" rectilinea	Ross-shire	Dr. B. White	June	In litt.	At sugar.
Cloantha solidaginis	Ross-shire	Dr. B. White	August	In litt.	At sugar.
Calocampa exoleta	Colchester	W. H. Harwood	...	In litt.	Larvæ feeding on dock seed.
Xylina semibrunnea	Gloucester	J. Merrin	October	In litt.	At ivy.
" "	St. Ives	W. Jagger	...	In litt.	One at sugar.
" "	Hackney	W. Machin	July (e.)	Entom. 154	Larvæ beaten from oak.

Cucullia lychnitis	Haslemere	C. G. Barrett	Aug.	In litt.	Larvæ on flowers of *Verbascum nigrum*.
" "	Box Hill	W. Machin	Aug.	Entom. 126	Larvæ.
" chamomillæ	Haslemere	C. G. Barrett	April	In litt.	On a fence.
Heliothis marginata	Haslemere	C. G. Rarrett	June	In litt.	At *Echium* bloom.
" peltigera	Exeter	...	...	E. M. M. 130	Only one or two this season.
" armigera	Margate	A. G. Boyd	Aug. (e.)	E. M. M. 147	
Anarta melanopa	Shetlands	T. Blackburn	June (b.)	E. M. M. 102	Not uncommon.
Agrophila sulphuralis	Bury	Rev. A. H. Wratislaw	...	Entom. 119.	Also at Tyddenham.
Acontia luctuosa	Gravesend	D. T. Button	...	Entom. 129	Bred freely from egg.
" "	Margate	Julia E. Cox	...	Entom. 129	In fields.
" "	Near Gravesend	H. Vaughan	May	In litt.	Ova obtained.
Erastria venustula	Epping	A. Woodage	May 27	Entom. 100	A few fine specimens.
" "	Epping	D. B. Gill	June	In litt.	Scarce this season.
" "	Loughton	H. Vaughan	June 13	In litt.	One specimen.
" fuscula	Colchester	W. H. Harwood	June	In litt.	Four specimens at sugar.
Hydrelia unca	York	T. J. Carrington	June 4	In litt.	Amongst *Carex*.
Brephos notha	Altyre	G. Norman	April 5	In litt.	Flying along with *parthenias*.
Plusia bractea	Aweswater	W. Weston	Aug. 6.	In litt.	One flying.
" "	Balmuto	J. B. Syme	June (e.)	Entom. 116	One at flowers of Martagon lily.
" V-aureum	Ross-shire	Dr. B. White	June	In litt.	At flowers.
" "	Isle of Man	E. Birchall	June (b.)	Entom. 110	
" "	Balmuto	J. B. Syme	June (e.)	Entom. 116	Common at Martagon lily.
" interrogationis	Ross-shire	Dr. B. White	July	In litt.	Flying over heather by day.
Stilbia anomala	Ross-shire	Dr. B. White	Aug.	In litt.	Flying over heather at dusk.
" "	Forres	G. Norman	Aug. 12.	In litt.	At sugar.
Catocala fraxini	Ipswich	...	Aug. 22	Daily News	Recorded by J. Balding.
" "	Eastland W.	E. L. Ragonot	Sept. 12	E. M. M. 129	At sugar.
" "	Eastbourne	"A visitor"	Aug. 20	Entom. 165	
" "	Brighton	...	Aug.	Entom. 155	Flew to a window.
" "	Aldeburgh	N. F. Hele	Aug. 21	Entom. 155	One at sugar, another at light.
" sponsa	Deal ...	H. J. Harding	...	Entom. 155	Sugar. No oak near.
Epione vespertaria	Near York	T. J. Carrington	July 2	In litt.	Scarce.
" advenaria	Gloucester	J. Merrin ...	May	In litt.	
" "	Huddersfield	G. T. Porritt	...	In litt.	Bred. Larvæ fed on bramble.
" "	Leith Hill	Dr. B. Gill	June	In litt.	Numerous.
Eurymene dolabraria	St. Osyth	W. H. Harwood	...	In litt.	

Scarce and Local British Lepidoptera for 1868—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Eurymene dolabraria	Monks W.	W. Jagger	...	In litt.	Off tree trunks.
" "	Wallasey	E. L. Ragonot	June 3	In litt.	By beating.
" "	Buckhurst H.	P. B. Smith	June 6	In litt.	
Pericallia syringaria	Near York	T. J. Carrington	June	In litt.	Ova obtained.
" "	Colchester	W. H. Harwood	May (e.)	In litt.	Two larvæ on honeysuckle.
" "	Near Croydon	P. C. Wormald	June	In litt.	
Selenia illustraria	Gravesend	D. T. Button	...	Entom. 129	In the town at lights.
Ennomos fuscantaria	Lewes	J. S. & A. Jenner	Sept. (e.)	In litt.	At light.
" "	Hampstead	P. C. Wormald	August	In litt.	Three at light.
" "	York	W. Prest	...	In litt.	Bred from larvæ on ash.
" erosaria	Colchester	W. H. Harwood	June	In litt.	A dozen larvæ.
" "	Hampstead	P. C. Wormald	June 17	In litt.	Bred from larva found.
Nyssia hispidaria	Colchester	W. H. Harwood	...	In litt.	At a gas lamp.
" "	Richmond	J. B. Blackburn	...	E. M. M. 47	
Cleora glabraria	Woolmer F.	C. G. Barrett	July	In litt.	Beaten from oak.
Boarmia abietaria	Gloucester	J. Merrin	July	In litt.	
" "	Box Hill	W. Machin	...	Entom. 126	Bred.
" "	Headley Lane	Dr. B. Gill	July	In litt.	
" "	Woolmer F.	C. G. Barrett	July	In litt.	Beaten from oak.
" roboraria	St. Osyth	W. H. Harwood	...	In litt.	A ♀. Laid forty ova.
" consortaria	Mickleham	Dr. B. Gill	July	In litt.	
" "	Woolmer F.	C. G. Barrett	July	In litt.	Pupa in moss on oak bark.
Tephrosia extersaria	Darenth	W. Machin	...	Entom. 126	Larvæ on oak.
" "	Haslemere	C. G. Barrett	May	In litt.	Apple and fir trunks.
" "	Worcester	A. Edmunds	April & May	In litt.	Fifteen bred. Also in May.
Geometra papilionaria	Croydon	H. Vaughan	July	In litt.	
" "	Ross-shire	Dr. B. White	July	In litt.	Flying at dusk and at rest.
" "	Near York	T. J. Carrington	July 11	In litt.	In fine condition.
Nemoria viridata	Witherslack	J. B. Hodgkinson	May	E. M. M. 49	
Iodis vernaria	Croydon	H. Vaughan	July	In litt.	Common.
" "	Greenhithe	W. Machin	...	Entom. 126	Larvæ on *Clematis.*
Phorodesma bajularia	Hampstead	H. Vaughan	June	In litt.	Common.
" "	Hampstead	P. C. Wormald	June 19	In litt.	Several. Flies before sunset.
" "	Brampton W.	W. Jagger	...	In litt.	By beating.

Hyria auroraria	Wicken F.	Hon. T. de Grey	June 27	E. M. M. 104	
Eupisteria heparata	Colchester	W. H. Harwood	...	In litt.	Not scarce among alders.
„ „	Leith Hill	Dr. B. Gill	June	In litt.	Several specimens.
„ „	Worcester	A. Edmunds	May 19	In litt.	Two bred.
Acidalia rubricata	Norfolk	Hon T. de Grey	June 6—8	E. M. M. 104	
„ „	Tyddenham	Rev. A. H. Wratislaw	...	Entom. 119	Forty-five specimens.
„ trigeminata	Colchester	W. H. Harwood	May (c.)	In litt.	About eight specimens.
„ „	Epping	P. B. Smith	June 16	In litt.	
„ contiguaria	Bangor	T. J. Carrington	September	In litt.	At light.
„ rusticata	Gravesend	D. T. Button	...	Entom. 129	Common in hedge-rows.
„ straminata	Croydon	P. B. Smith	July 8	In litt.	
„ „	Woolmer F.	C. G. Barrett	June	In litt.	
„ subsericeata	Dedham	W. H. Harwood	June	In litt.	
„ „	Wallasey	E. L. Ragonot	May—June	In litt.	Larvæ common in April.
„ „	Howth	J. B. Hodgkinson	June	In litt.	
„ immutata	Wicken F.	Hon. T. de Grey	June 27	E. M. M. 104	
„ „	Near York	T. J. Carrington	July 2	In litt.	Several specimens.
„ strigilata	Folkestone	P. C. Wormald	July 4—8	In litt.	Three examples.
„ emutaria	Kings' Lynn	E. L. King	June 23—26	H. T. S. in E. M. M. 107	9 p.m., near salt marsh.
„ „	Gravesend	D. T. Button	July 28—Aug. 10	Entom. 129	On water plants at dusk.
„ inornata	Norfolk	Hon. T. de Grey	June 20	E. M. M. 104	
„ „	Near York	T. J. Carrington	July 11	In litt.	A fine series.
Corycia taminata	Croydon	H. Vaughan	May	In litt.	
Aleucis pictaria	Colchester	W. H. Harwood	April	In litt.	About thirty specimens.
„ „	Loughton	T. Eedle	Spring	E. M. M. 49	
Aventia flexula	Near Dorking	Dr. B. Gill	July	In litt.	
„ „	Colchester	W. H. Harwood	April	In litt.	Beat the larva.
Macaria alternata	Fairlight	Rev. E. N. Bloomfield	July 20	E. M. M. 23	Rather worn.
Mœsia belgiaria	Croydon	H. Vaughan	April	In litt.	Scarce this season.
„ „	Storeton	— Almond	June	E. L. R. in litt.	
„ „	Huddersfield	T. G. Porritt	...	In litt.	Common on heaths.
Fidonia pineataria	Ross-shire	Dr. B. White	July	E. M. M. 404	Flying over bilberry by day.
„ limbaria	Colchester	W. H. Harwood	...	In litt.	By no means uncommon.
„ „	Gravesend	D. T. Button	May	Entom. 129	Some nearly black.
„ „	Near Grays	Dr. B. Gill	August	In litt.	

LEPIDOPTERA.

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Aspilates citraria	Southend	H. Vaughan	May	In litt.	Also bred in August.
,, ,,	Near Gravesend	P. B. Smith	June & Aug.	In litt.	
,, ,,	Margate	Julia E. Cox	...	Entom. 129	In fields.
Sterrha sacraria	Wallasey	C. S. Gregson	July	E.L.R. in E.M. M.	One specimen.
Cheimatobia boreata	W. Wickham	P. C. Wormald	May	In litt.	Larvæ beaten from birch.
,, ,,	Ross-shire	Dr. B. White	June	In litt.	A few larvæ.
Larentia cæsiata	Corwen, N. W.	P. C. Wormald	July 13	In litt.	New locality.
,, salicata	Ross-shire	Dr. B. White	June	In litt.	Not common.
Emmelesia unifasciata	Wallasey	E. L. Ragonot	...	In litt.	One by beating.
,, ,,	Preston	J. B. Hodgkinson	July	In litt.	Scarce this season.
,, ,,	Gravesend	D. T. Button	...	Entom. 129	On flowers at night.
,, ,,	Near Cheam	Dr. B. Gill	August	In litt.	First time since 1862.
,, ericetaria	Ross-shire	Dr. B. White	July	In litt.	Not very common.
Eupithecia venosata	Llangollen	E. L. Ragonot	...	In litt.	Bred from larvæ found.
,, ,,	York	W. Prest	June	In litt.	Bred.
,, ,,	Croydon	H. Vaughan	June	In litt.	Larvæ taken.
,, ,,	Near Lewes	J. H. A. Jenner	June	In litt.	Over *Silene inflata*.
,, pulchellata	Near Cheam	Dr. B. Gill	August 6	In litt.	
,, ,,	Huddersfield	G. T. Porritt	July	In litt.	Larvæ in foxglove.
,, ,,	Towyn	E. L. Ragonot	...	In litt.	Larvæ in foxglove.
,, ,,	Croydon	H. Vaughan	June	In litt.	In larval state.
,, succenturiata	Towyn	E. L. Ragonot	July	In litt.	Beating and at Ragwort.
,, subfulvata	Near Cheam	Dr. B. Gill	August	In litt.	
,, ,,	Huddersfield	G. T. Porritt	...	In litt.	Bred a fine series.
,, ,,	Wallasey	E. L. Ragonot	August	In litt.	A fine series.
,, subumbrata	Herne Bay	H. Vaughan	July	In litt.	Larvæ.
,, ,,	Herne Bay	W. C. Boyd	July	E. M. M. 147	Two specimens.
,, pygmæata	Witherslack	J. B. Hodgkinson	June	In litt.	
,, virgaureata	Wallasey	E. L. Ragonot	...	In litt.	Several specimens.
,, ,,	Witherslack	J. B. Hodgkinson	August 6	In litt.	
,, albipunctata	York	W. Prest	...	In litt.	Bred.
,, pusillata	W. Wickham	T. Eedle	Spring	E. M. M. 49	
,, ,,	W. Wickham	P. C. Wormald	May 11—19	In litt.	By beating spruce fir.
,, lariciata	Staffordshire	J. Chappell	June	E. M. M. 48	

Eupithecia lariciata	Near York	T. J. Carrington	June	In litt.	Amongst larch.
,, ,,	Worcester	A. Edmunds	June 10	In litt.	4 by beating.
,, irriguata	Haslemere	C. G. Barrett	April	In litt.	On a birch trunk.
,, pimpinellata	Scarboro'	W. Prest	August	In litt.	In larval state.
,, fraxinata	Derby	G. Baker	Winter	E. M. M. 22	Pupæ under ash bark.
,, ,,	Huddersfield	G. T. Porritt	August (b.)	In litt.	Larvæ beaten from ash.
,, ,,	Croydon	W. Machin	...	Entom. 126	Larvæ on ash.
,, ,,	York	W. Prest	...	In litt.	Bred from larvæ on ash.
,, indigata	Witherslack	J. B. Hodgkinson	June	In litt.	
,, ,,	York	T. J. Carrington	June	In litt.	
,, ,,	Leith Hill	Dr. B. Gill	June	In litt.	
,, distinctata	Howth	J. B. Hodgkinson	June	In litt.	
,, valerianata	York	W. Prest	...	In litt.	New to locality.
,, ,,	Derby	G. Baker	July	E. M. M. 22	Flowers of *Valeriana officinalis*.
,, campanulata	Headley Lane	P. C. Wormald	July 31 (67)	In litt.	One specimen.
,, expallidata	Conway	E. L. Ragonot	July 13	In litt.	One specimen.
,, tenuiata	Perthshire	Dr. B. White	April	In litt.	Larvæ common.
,, ,,	York	T. J. Carrington	July 30	In litt.	A fine series.
Collix sparsata	Wicken Fen	Hon. T. De Grey	June 27	E. M. M. 104	
,, ,,	York	T. J. Carrington	June (b.)	E. M. M. 77	A fine series.
Lobophora sexalisata	Witherslack	J. B. Hodgkinson	July	In litt.	
,, hexapterata	Worcester	A. Edmunds	May 28	In litt.	6 by beating.
,, viretata	Cheam	Dr. B. Gill	August	In litt.	
Thera simulata	Ross-shire	Dr. B. White	July	In litt	Common.
,, ,,	Witherslack	J. B. Hodgkinson	July	E. M. M. 49	
,, firmaria	Bidston	E. L. Ragonot	...	In litt.	Larvæ common.
Hypsipetes ruberaria	Wallasey	E. L. Ragonot	...	In litt.	Several.
,, ,,	York	W. Prest	...	In litt.	Bred from larvæ on sallow.
Melanippe hastata	Gloucester	J. Merrin	May	In litt.	
,, tristata	Ross-shire	Dr. B. White	June	In litt.	Not common.
Coremia munitata	Ross-shire	Dr. B. White	July	In litt.	♂ common, ♀ scarce.
,, quadrifasciaria	Colchester	W. H. Harwood	...	In litt.	6 or 7 specimens.
Camptogramma fluviata	Near Lewes	J. H. A. Jenner	August	In litt.	One specimen.
,, ,,	Huddersfield	G. T. Porritt	...	In litt.	Bred 8 specimens.
,, ,,	York	T. J. Carrington	July 4	In litt.	
,, ,,	Gravesend	Dr. T. Button	...	Entom. 129	Common at light, &c.
,, ,,	Hampstead	P. C. Wormald	August 18	In litt.	At a gas-lamp.
Phibalapteryx lapidata	Kyles of Bute	J. Dunsmore	...	Entom. 18	Flying in early evening.
,, lignata	York	T. J. Carrington	August 8	In litt.	

Scarce and Local British Lepidoptera for 1868—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Phibalapteryx lignata	Gravesend	D. T. Button	May & Aug.	Entom. 129	
„ „	Askham Bog	W. Prest	...	In litt.	Scarce.
Scotosia undulata	Colchester	W. H. Harwood	...	In litt.	About a dozen larvæ,
„ „	Monk's Wood	W. Jagger	...	In litt.	Beaten out.
„ „	Witherslack	J. B. Hodgkinson	June	In litt.	
„ „	York	T. J. Carrington	July 11	In litt.	
„ „	Leith Hill	Dr. B. Gill	June	In litt.	Scarce.
„ „	Worcester	A. Edmunds	June 10	In litt.	By beating.
Cidaria psitticata	Gloucester	J. Merrin	Sept.	In litt.	
„ „	Ross-shire	Dr. B. White	Sept.	In litt.	Bred.
„ „	Lyndhurst	Dr. B. Gill	October	In litt.	At rest.
„ picata	Sevenoaks	Dr. B. Gill	June	In litt.	
„ silaceata	Perthshire	Dr. B. White	May	In litt.	Not very common.
„ „	Gloucester	J. Merrin	June	In litt.	
Lithostege griseata	Bury	Rev. A. H. Wratislau.	...	Entom. 119	Fifty larvæ.
Chæsias obliquaria	Colchester	W. H. Harwood	...	In litt.	Bred four, captured one.
„ „	Ross-shire	Dr. B. White	June	In litt.	Scarce. New locality.
Madopa salicalis	Haslemere	C. G. Barrett	May	In litt.	In woods amongst sallow.
Hypæna crassalis	Sevenoaks	Dr. B. Gill	June	In litt.	
Hypænodes costæstrigalis	York	T. J. Carrington	July 24	In litt.	Frequently at sugar.
„ „	York	W. Prest	July	In litt.	At sugar.
Schrankia turfosalis	Woolmer F.	C. G. Barrett	June	In litt.	In a bog.
Odontia dentalis	Huddersfield	G. T. Porritt	...	In litt.	A few bred.
Pyralis glaucinalis	Kentish Town	H. Vaughan	July	In litt.	At light.
„ „	York	W. Prest	July	In litt.	At sugar.
Clediobia angustalis	Box Hill	P. C. Wormald	July 18	In litt.	Five or six specimens.
Rhodaria sanguinalis	Wallasey	E. L. Ragonot	May & June	In litt.	Common.
Agrotera nemoralis	Guestling	Rev. E. M. Bloomfield	June 11	E. M. M. 106	Second in same locality.
Nascia cilialis	Wicken Fen	Hon. T. de Grey	June 27	E. M. M. 104	
Botys hyalinalis	Reigate	Dr. B. Gill	July	In litt.	Scarcer than usual.
„ lancealis	Langham	W. H. Harwood	...	In litt.	Several specimens.

Botys lancealis	Guestling	Rev. E. N. Bloomfield	July 5	E. M. M. 28	Two specimens.
„ terrealis	Grange	J. B. Hodgkinson	June	In litt.	
Spilodes sticticalis	Colchester	W. H. Harwood	Sept. (b.)	E. M. M. 131	
„ „	Norfolk	Hon. T. De Grey	June 6—8	E. M. M. 104	
„ „	Bury	Rev. A. H. Wratislau		Entom. 119	Sixteen specimens.
„ cinctalis	Croydon	H. Vaughan	May & Aug.	In litt.	
„ „	Near Cheam	Dr. B. Gill	August	In litt.	Clover fields.
„ „	Colchester	W. H. Harwood		In litt.	In lucerne and clover fields.
Scoparia basistrigalis	Haslemere	C. G. Barrett	June	In litt.	At sugar in woods.
„ „	Mickleham	Dr. B. Gill	July	In litt.	One specimen.
„ atomalis	Ross-shire	T. Blackburn	June (b.)	E. M. M. 102	
„ ingratella	Folkestone	Hon. T. De Grey	June 13—15.	E. M. M. 104	
„ „	Folkestone	P. C. Wormald	July	In litt.	Several in the Warren.
„ truncicolella	W. Wickham	P. C. Wormald	Aug. 1	In litt.	
„ murana	Ross-shire	T. Blackburn	June (b.)	E. M. M. 102	
„ lineola	Howth	J. B. Hodgkinson	July	In litt.	
„ angustea	Mickleham	P. C. Wormald	Sept. 5	In litt.	
„ „	Folkestone	H. Vaughan	Sept. (b.)	E. M. M. 131	New locality.
„ pallida	York	T. J. Carrington	July 6	In litt.	Frequent.
Galleria mellonella	Folkestone	H. Vaughan	Sept. (b.)	E. M. M. 131	New locality.
Ephestia ficella	York	W. Prest		In litt.	Bred from grocers' currants.
Homœosoma nimbella	Kilburn	P. C. Wormald	Aug. 18	In litt.	At a gas lamp.
„ nebulella					
„ binævella	Llangollen	P. C. Wormald	July 13	In litt.	On the Eglwyseg Rocks
„ sinuella	Folkestone	P. C. Wormald	July	In litt.	
Cryptoblabes bistriga	Haslemere	C. G. Barrett	June	In litt.	Flying in a wood.
Myelois cribrum	Essex Marshes	Dr. B. Gill	July	In litt.	Bred from thistles.
„ „	Southend	H. Vaughan	May	In litt.	In pupal state.
„ pinguis	Hampstead	P. C. Wormald	August	In litt.	At gas lamps.
Nephopteryx abietella	Woolmer F.	C. G. Barrett	July	In litt.	Bred from Scotch fir.
„ „	Norfolk	Hon. T. De Grey	May 29—30.	E. M. M. 104	
„ „	Ross-shire	Dr. B. White	July	In litt.	Bred from pupa in a fir stump.
„ roborella	Colchester	W. H. Harwood	June (e.) and July (b.)	In litt.	Four specimens.
„ „	Worcester	A. Edmunds	July 2	In litt.	One by beating.
Pempelia ornatella	Folkestone	P. C. Wormald	July	In litt.	Several specimens.
„ subornatella	Howth	J. B. Hodgkinson	June	In litt.	
„ formosa	Stratford	Dr. B. Gill	June	In litt.	Beaten from elm.

Scarce and Local British Lepidoptera for 1868—*continued.*

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Crambus dumetellus	Haslemere	C. G Barrett	June	In litt.	In rough pastures.
„ uliginosellus	Woolmer F.	C. G. Barrett	July	In litt.	In a marsh.
„ contaminellus	Preston	J. B. Hodgkinson	July	In litt.	
„ selasellus	Preston	J. B. Hodgkinson	July	In litt.	
„ „	York	T. J. Carrington	Aug. 19	In litt.	
„ rorellus	Folkestone	E. G. Meek	May (e.)	E. M. M. 150	A fine specimen.
Chloephora quercana	Colchester	W. H. Harwood	...	In litt.	Bred about twenty.
„ „	Croydon	H. Vaughan	July	In litt.	
Sarrothripa revayana	Witherslack	J. B. Hodgkinson	September	In litt.	
„ „	Ross-shire	Dr. B. White	August	In litt.	Beaten out of an ash.
„ „	Lyndhurst	Dr. B. Gill	October	In litt.	Scarce.
„ „	W. Wickham	P. C. Wormald	Aug. 21	In litt.	One specimen.
Amphisa gerningana	Shetlands	T. Blackburn	June (b.)	E. M. M. 102	Not uncommon.
Antithesia capræana	Haslemere	C. G. Barrett	June	In litt.	Bred from sallow.
„ prælongana	Witherslack	J. B. Hodgkinson	June	In litt.	
„ „	Ross-shire	T. Blackburn	June	E. M. M. 102	
„ „	Ross-shire	Dr. B. White	June	In litt.	
„ marginana	Witherslack	J. B. Hodgkinson	June	In litt.	
„ similana	Ross-shire	T. Blackburn	June	E. M. M. 102	
„ sauciana	Haslemere	C. G. Barrett	July	In litt.	Among *Vaccinium myrtillus.*
„ „	Ross-shire	T. Blackburn	June	E. M. M. 102	
„ „	Ross-shire	Dr. B. White	June	In litt.	
Dichelia grotiana	Epping	P. C. Wormald	June 17	In litt.	
Tortrix cinnamomeana	Haslemere	C. G. Barrett	July	In litt.	Beaten from oaks.
„ „	York	T. J. Carrington	July 2	In litt.	Amongst larch.
Lozotænia cratægana	Woolmer F.	C. G. Barrett	June	In litt.	Bred from sallow.
Phlœodes crenana	Richmond	T. Blackburn	Autumn	E. M. M. 23	Bred from pupa found.
Catoptria aspidiscana	Witherslack	J. B. Hodgkinson	May	E. M. M. 49	Five specimens.
„ cæcimaculana	Towyn	E. L. Ragonot	July	In litt.	Several.
Halonota bimaculana	Ross-shire	Dr. B. White	Aug. & Sept.	In litt.	Common.
„ tetragonana	Haslemere	C. G. Barrett	June	In litt.	Flying in the afternoon.
Dicrorampha flavidorsana	Alphington	H. D'Orville	June 19	E. M. M. 128	Out of *Artemisia absinthium.*
„ consortana	Witherslack	J. B. Hodgkinson	July	In litt.	

Coccyx distinctana	Norfolk	Hon. T. De Grey	May 15—16	E. M. M. 104	
Hedya lariciana	Grange	J. B. Hodgkinson	June	In litt.	
,, servillana	Haslemere	C. G. Barrett	May	In litt.	Among sallows.
Anchylopera ramella	Ross-shire	T. Blackburn	June (b.)	E. M. M. 102	
,, diminutana	Haslemere	C. G. Barrett	June	In litt.	Among sallows.
,, biarcuana	Witherslack	J. B. Hodgkinson	June	In litt.	
,, myrtillana	Perthshire	Dr. B. White	May	In litt.	
,, obtusana	Haslemere	C. G. Barrett	June	In litt.	Among underwood.
,, siculana	Haslemere	C. G. Barrett	May	In litt.	In marshy places.
,, ,,	Witherslack	J. B. Hodgkinson	June	In litt.	
,, unguicella	Ross-shire	T. Blackburn	June (b.)	E. M. M. 102	
,, ,,	Ross-shire	Dr. B. White	June	In litt.	
Bactra uliginosana	Wicken F.	Hon. T. De Grey	June 27	E. M. M. 104	
Oxygraphia literana	Lyndhurst	Dr. B. Gill...	October	In litt.	
,, scotana	Ross-shire	Dr. B. White	Sept.	In litt.	
Peronea maccana	Ross-shire	Dr. B. White	Sept.	In litt.	Rare.
,, potentillana					
Pœcilochroma signatana	Witherslack	J. B. Hodgkinson	July	In litt.	
Anisotænia ulmana	Llangollen	P. C. Wormald	July 12	In litt.	
Stigmonota orobana	Scarboro'	W Prest ...	August	In litt.	Larvæ.
Asthenia coniferana	Haslemere	C. G. Barrett	July	In litt.	In fir woods.
,, ,,	Witherslack	J. B. Hodgkinson	July	In litt.	
Retinea turionella	Haslemere	C. G. Barrett	May	In litt.	Bred from fir shoots.
Pamplusia monticolana	Near Penrith	W. Weston	August	In litt.	
Eudopisa puncticostana	Haslemere	C. G. Barrett	June	In litt.	Among underwood.
Grapholitha microgrammana	Folkestone	Hon. T. De Grey	June 13—15	E. M. M. 104	Also by P. C. Wormald.
,, citrana	Folkestone	P. C. Wormald	July	In litt.	Not common.
Cnephasia Colquhounana	Howth	J. B. Hodgkinson	June	In litt.	
Euchromia purpurana	Hampstead	P. C. Wormald	Aug. 16	In litt.	At light.
,, ericetana	Grange	J. B. Hodgkinson	June	In litt.	
,, rufana ...	Grange	J. B. Hodgkinson	June	In litt.	
Sericoris abscissana	Folkestone	P. C. Wormald	July	In litt.	
,, Euphorbiana	Folkestone	H. Vaughan	Sept. (b.)	E. M. M. 131	Larvæ in spurge.
,, ,,	Folkestone	Hon. T. De Grey	June 13—15	E. M. M. 104	
,, ,,	Folkestone	W. Purdey			
,, herbana	Norfolk	Hon. T. De Grey	June 6—8	E. M. M. 104	
Mixodia palustrana	Ross-shire	T. Blackburn	June	E. M. M. 102	
,, ,,	Ross-shire	Dr. B. White	July	In litt.	*Not* among pine trees.
Chrosis Audouinana	Haslemere	C. G. Barrett	June	In litt.	Among underwood.
,, ,,	Middlesex	P. C. Wormald	June 6	In litt.	One at Ruislip.

Species.	Locality.	Captor.	Date.	Reference.	Remarks.
Argyrolepia cnicana	Norfolk	Hon. T. De Grey	June 20	E. M. M. 104	
Eupœcilia albicapitana	Howth	J. B. Hodgkinson	June	In litt.	
„ „	Isle of Man	E. Birchall	June (b.)	Entom. 110	
„ dubitana	Hampstead	P. C. Wormald	Aug. 18	In litt.	One at a gas lamp.
„ ambiguella	Haslemere	C. G. Barrett	May	In litt.	Among *Rhamnus*
„ curvistrigana	Haslemere	C. G. Barrett	July	In litt	Among underwood.
„ notulana	Norfolk	Hon. T. De Grey	June 6—8	E. M. M. 104	
„ subroseana	Ross-shire	T. Blackburn	June	E. M. M. 102	
„ „	Ross-shire	Dr. B. White	June	In litt.	Among heather.
„ „	Haslemere	C. G. Barrett	June	In litt.	Among underwood.
„ anthemidana	Norfolk	Hon. T. De Grey	May 29—30	E. M. M. 104	
Lozopera Smeathmanniana	Witherslack	J. B. Hodgkinson	June	In litt.	New locality.
„ „	Hampstead	P. C. Wormald	August	In litt.	Three on gas lamps.
Pterophorus acanthodactylus	Ross-shire	Dr. B. White	July	In litt.	
„ parvidactylus	Witherslack	J. B. Hodgkinson	June	In litt.	
„ „	Near Lewes	J. H. A. Jenner	July	In litt.	
„ Lœwii	Wallasey	E. L. Ragonot	Aug. 8	In litt.	One specimen.
„ plagiodactylus	Witherslack	J. B. Hodgkinson	June	In litt.	
„ „	Ross-shire	Dr. B. White	July	In litt.	Scarce.
„ Leinigianus	...	H. J. Harding	...	Entom. 118	Locality not named.
„ tephradactylus	Witherslack	J. B. Hodgkinson	...	In litt.	Bred.
„ paludum	Woolmer, F.	C. G. Barrett	June	In litt.	In a marsh.

A Table of Larvæ of British Lepidoptera discovered in 1868.

Species.	Date.	Food.	By whom and where described.	Remarks.
Lithosia molybdeola (sericea) ..	May (e.) ..	Will eat lichen, moss, &c.	Rev. J. Hellins, E. M. M. v. 109.	Eggs sent by Mr. Doubleday.
Agrotis puta ..	About Christmas.	Will eat lettuce, &c. ..	W. Buckler, E. M. M. iv. 199.	Eggs obtained by Dr. Hearder.
Xanthia gilvago ..	June 13—15.	Seeds of wych elm ..	W. Buckler, E. M. M. iv. 156.	Previously "undescribed because so common"!!
Acidalia dilutaria (interjectaria)	May ..	Fed on dandelion, pimpernel, &c.	Rev. J. Hellins, E. M. M. v. 95.	Eggs from Mr. Brown.
Acidalia holosericata ..	May ..	Helianthemum vulgare ..	Rev. J. Hellins, E. M. M. v. 95.	Eggs from Mr. A. E. Hudd.
Chrosis euphorbiana ..	July & Sept.	Euphorbia palustris (here on E. amygdaloïdes).	Prof. Zeller, E. M. M. iv. 9.	Accidentally omitted last year.

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